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L96 ANSWER 1 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:259782 HCAPLUS Full-text

DN 146:11136

TI Surface treatments for the corrosion protection of an aerospace alloy

AU Khobaib, M.; Voevodin, N. N.; Balbyshev, V. N.; Donley, M. S.

CS University of Dayton Research Institute, Dayton, OH, 45469-0168, USA

SO Advances in Surface Treatment: Research & Applications (ASTRA), Proceedings of the International Conference, Hyderabad, India, Nov. 3-6, 2003 (2004), Meeting Date 2003, 602-612. Editor(s): Sudarshan, T. S. Publisher: International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad, India. CODEN: 69HYLJ; ISBN: 0-87170-814-0

DT Conference

LA English

AB High strength aluminum alloys are one of the foundations of the modern aerospace industry. However, their heterogeneous microstructure, specifically in the case of AA2024-T3, makes them very susceptible to localized corrosion in their service environments. Hence, any long-term application of these materials requires comprehensive corrosion protection. Current corrosion protection paint chemical relies heavily on the use of Cr(VI) compds. in the form of strontium or barium chromate, which are incorporated into both the surface pretreatment and the primers. These chromate-based systems are very effective, but are known carcinogens and therefore must be eliminated. To address this problem, the U.S. Air Force is actively working on the development of environmentally compliant aircraft coating systems that will adequately provide corrosion protection to these alloy structures. It appears that there is no simple scheme available to replace chromate at this time. The objective of this study is to investigate a multifaceted approach to address the replacement of chromates in the current surface treatment and primer scheme, known as the permanent foundation layer. A number of alternatives are being investigated and sol-gel based surface treatments have been found to be a potential candidate for the replacement of the current

chromate based approach. Surface modification based on the conventional epoxy-zirconate sol-gel and the newly developed self assembled nanophase particle (SNAP) silicon sol-gel coatings have been investigated. The formation of SNAP sol-gel relies on an aqueous solution process to generate nanoscale particles with an inorg. core and an organic exterior. SNAP coatings provide functionality for bonding to the appropriate substrate and tailorable chemical for interaction with subsequent polymer layers. Adhesion and barrier properties of the SNAP sol-gel surface treatment have been compared to the corrosion protection offered by conventional coating systems. It has been demonstrated in a 2000 h salt-spray test that coating systems with SNAP surface treatment perform as well as systems with Alodine pretreatment and a chromated primer. Superior adhesion and corrosion protection characteristics make SNAP surface treatment a promising environmentally benign alternative to chromate pretreatments.

CC 56-6 (Nonferrous Metals and Alloys)

IT 56258-31-2, Alodine 1200

RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)

(surface treatments for corrosion protection of aerospace alloy)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Agarwala, V	1994		621	Corrosion	
Anon	1990				
Anon	2002	7		Boeing A & M Environ	
Anon	1995	60	45947	EPA Federal Register	
Anon	1995			Implementations Plan	
Aramaki, K	2001	43	2201	Corrosion Science	HCAPLUS
Arenas, M	2002	44	511	Corrosion Science	HCAPLUS
Arnott, D	1989	45	30	Corrosion	
Arnott, D	1986	9	162	Metals Forum	
Barrow, D	1990	122-1	443	Key Eng Mater	
Blohowiak, K	1996	28	440	Proceedings of SAMPE	HCAPLUS
Blohowiak, K	1996		440	Proceedings of the 2	HCAPLUS
Brinker, C	1998			Better Ceramics Thro	
Buchheit, R	2000		67	Proceedings of NACE	HCAPLUS
Buchheit, R	2000	99-26	205	Proceedings of the S	HCAPLUS
Chen, X	1995	185	1	Journal of Non-Cryst	HCAPLUS
Deanna, P	1984		130	Fundamental Aspects	HCAPLUS
Derosa, R	2000	56	395	Corrosion	HCAPLUS
Donley, M	2003			Progress in Organic	
Guglielmi, M	1997	8	443	Journal of Sol-gel S	HCAPLUS
Higgins, G	1990			US 4963198	HCAPLUS
Hinton, B	1985	10	12	Corrosion, Australia	HCAPLUS
Hinton, B	1992	180	15	Journal of Alloys &	HCAPLUS
Hinton, B	1984	17	211	Metals Forum	
Isacacs, A	1991	32	653	Corrosion Science	
Kato, K	1993	28	4033	Journal of Materials	HCAPLUS
Kawasaki, I	1992			EP 0514183	HCAPLUS
Kelly, T	1983			US 4398966	HCAPLUS
Khobaib, M	2001	41	266	Progress in Organic	HCAPLUS
Khobaib, M	2001	140	16	Surface and Coatings	HCAPLUS
Koehan, F	1993	38	1181	SAMPE	
Livage, J	1994	152-1	43	Mater Sci Forum	HCAPLUS
Lumsden, J	1984		122	Fundamental Aspects	HCAPLUS
Mansfeld, F	1994	29		British Corrosion Jo	HCAPLUS
Mansfeld, F	1991	138	L47	Journal of Electroch	
Mansfeld, F	1993		219	Proceedings of the 1	HCAPLUS
McCafferty, E	1984		112	Fundamental Aspects	HCAPLUS

McKnight, S	1994	39	2760	SAMPE	
Mitani, M	1992			US 5132003	HCAPLUS
Parkhill, R	1997			The Symposium:Procee	
Reghi, G	1992			US 5089064	HCAPLUS
Schmidt, H	1990	121	428	Journal of Non-Cryst	HCAPLUS
Shih, H	1989	45	610	Corrosion	HCAPLUS
Sugama, T	1993	27	1723	Journal of Materials	
Tanaka, S	1990	39	425	Boshoku Gijutsu, (Co	HCAPLUS
Voevodin, N	2001	41	288	Progress in Organic	
Vreugdenhil, A	2001	73	35	Journal of Coatings	HCAPLUS

L96 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:641713 HCAPLUS Full-text

DN 143:137352

TI Chemical test with ammonium molybdate for sol
-gel coating residue on aluminum alloy rivets

IN Tomt, Terry C.; Davis, Bruce R.; Jones, Steven
R.; Wire, Richard G.

PA The Boeing Company, USA

SO U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005158862	A1	20050721	US 2004-762073	20040120 <--
	EP 1557668	A1	20050727	EP 2004-78401	20041215 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU				
PRAI	US 2004-762073	A	20040120	<--	

AB The chemical test for the presence of sol-gel residue on Al or Al-alloy specimens (especially rivets) includes: (a) preparing aqueous NH₄ molybdate solution; (b) preparing aqueous HCl solution; and (c) mixing the solns. in 2:1 ratio in receptacles. An Al test specimen with unknown coating, a 1st control specimen, and 2nd control specimen are placed in sep. receptacles with the mixed solution. The 1st control specimen has a sol-gel coating over an Alodine coating, and the 2nd control specimen has only Alodine coating. By timing the change in color of the test and control specimens (or the solution becoming opaque), the method detcs. the type of coating on the test specimen. The Alodine coating on Al-alloy rivets promoted dark-blue color in the test solution in nominally 8.5 min, vs. 21 min in the presence of combined Alodine and sol-gel coating.

IC ICM G01N0021-00

INCL 436005000; 436166000

CC 56-10 (Nonferrous Metals and Alloys)

ST aluminum alloy rivet sol gel coating color
test soln; acidic molybdate soln test sol gel
coating aluminum rivet

IT Colorimetry

(chemical test by, for sol-gel residue; color test
with NH₄ molybdate for sol-gel
coating residue on aluminum alloy rivets)

IT Sol-gel processing

(coating, residue, chemical test for; color test with
NH₄ molybdate for sol-gel
coating residue on aluminum alloy rivets)

IT Fasteners

(rivets, Al-alloy; chemical test with NH4 molybdate
for sol-gel coating residue on aluminum
alloy rivets)

IT Coating process
(sol-gel, residue, chemical test for; color test with
NH4 molybdate for sol-gel
coating residue on aluminum alloy rivets)

IT Aluminum alloy, base
RL: DEV (Device component use); USES (Uses)
(rivets, test for sol-gel residue on; chemical test
with NH4 molybdate for sol-gel
coating residue on aluminum alloy rivets)

IT 12626-23-2, Alodine
RL: TEM (Technical or engineered material use); USES (Uses)
(coating, test for; chemical test with NH4
molybdate for sol-gel coating
residue on aluminum alloy rivets)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(rivets, test for sol-gel residue on; chemical test
with NH4 molybdate for sol-gel
coating residue on aluminum alloy rivets)

IT 7647-01-0, Hydrochloric acid, uses
12027-67-7, Ammonium molybdate
RL: TEM (Technical or engineered material use); USES (Uses)
(test solution with; chemical test with NH4 molybdate for
sol-gel coating residue on aluminum alloy
rivets)

IT 12626-23-2, Alodine
RL: TEM (Technical or engineered material use); USES (Uses)
(coating, test for; chemical test with NH4
molybdate for sol-gel coating
residue on aluminum alloy rivets)

RN 12626-23-2 HCAPLUS
CN Alodine (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(rivets, test for sol-gel residue on; chemical test
with NH4 molybdate for sol-gel
coating residue on aluminum alloy rivets)

RN 7429-90-5 HCAPLUS
CN Aluminum (CA INDEX NAME)

. Al

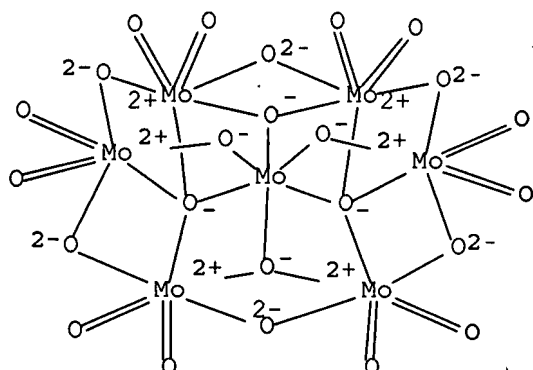
IT 7647-01-0, Hydrochloric acid, uses
12027-67-7, Ammonium molybdate
RL: TEM (Technical or engineered material use); USES (Uses)
(test solution with; chemical test with NH4 molybdate for
sol-gel coating residue on aluminum alloy
rivets)

RN 7647-01-0 HCAPLUS
CN Hydrochloric acid (CA INDEX NAME)

HCl

RN 12027-67-7 HCAPLUS

CN Molybdate (Mo7O246-), ammonium (1:6) (CA INDEX NAME)

●6 NH₄⁺

L96 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:996394 HCAPLUS Full-text

DN 141:419869

TI Sensor for detecting compounds

IN Lin, Chhiu-Tsu

PA Northern Illinois University, USA

SO PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004099754	A2	20041118	WO 2003-US41000	20031218 <--
	WO 2004099754	A3	20050616		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,				
	GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,				
	LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,				
	PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,				
	TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,				
	BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,				
	ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,				
	TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003304095	A1	20041126	AU 2003-304095	20031218 <--
	US 2006154414	A1	20060713	US 2005-540607	20051026 <--
PRAI	US 2002-437311P	P	20021230 <--		
	WO 2003-US41000	W	20031218 <--		

AB A chemical sensor having a sol-gel material affixable to a predetd. surface, and an indicator within the sol-gel, for detecting and signaling the presence of at least one chemical is provided. Also provided is an indicator for

detecting and indicating a presence of at least one chemical. The indicator includes a sol-gel material affixable to a predetd. surface and an indicator within the sol-gel, for detecting and signaling the presence of at least one chemical. There is provided a method of detecting at least one chemical by applying the indicator from above to a predetd. surface of an object and indicating the presence of a chemical. A method of making a chemical sensor encapsulating within a sol-gel a detector capable of detecting and signaling a presence of at least one chemical. A decontaminating agent for removing contaminants from an area, the decontaminating agent being formed of a sol-gel material affixable to a predetd. surface and a decontaminator having an affinity for the contaminants within the sol-gel for decontaminating at least one chemical present in the area.

- IC ICM G01N
- CC 79-2 (Inorganic Analytical Chemistry)
- ST optical sol gel sensor
- IT Chemical warfare agents
 - Colorimetric indicators
 - Colorimetry
 - Electron transfer
 - Insecticides
 - Nanoparticles
 - Optical sensors
 - Sol-gel processing
 - Xerogels
 - (chemical warfare agents and pesticides determination by sol-gel based charge-transfer optical sensor)
- IT Lewis acids
 - RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
 - (chemical warfare agents and pesticides determination by sol-gel based charge-transfer optical sensor)
- IT Pesticides
 - (organophosphorus; chemical warfare agents and pesticides determination by sol-gel based charge-transfer optical sensor)
- IT 9032-18-2, Sarinase
 - RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
 - (Sarinase; chemical warfare agents and pesticides determination by sol-gel based charge-transfer optical sensor)
- IT 56-38-2, Parathion 96-64-0, GD 107-44-8, GB 333-41-5 505-60-2, Sulfur mustard 25311-71-1 50782-69-9, VX
 - RL: ANT (Analyte); ANST (Analytical study)
 - (chemical warfare agents and pesticides determination by sol-gel based charge-transfer optical sensor)
- IT 76-61-9, Thymol blue 2893-78-9, Fichlor 13478-93-8, Nickel dimethylglyoxime 58693-64-4, Parathion hydrolase 89700-32-3, Somanase 118408-21-2
 - RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
 - (chemical warfare agents and pesticides determination by sol-gel based charge-transfer optical sensor)
- IT 1314-23-4, Zirconia, uses 7440-29-1, Thorium, uses 7440-45-1, Cerium, uses 7440-67-7, Zirconium, uses
 - RL: CAT (Catalyst use); USES (Uses)
 - (chemical warfare agents and pesticides determination by sol-gel based charge-transfer optical sensor)
- IT 9054-89-1
 - RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
 - (copper-zinc-containing; chemical warfare agents and pesticides

determination by

sol-gel based charge-transfer optical sensor)

IT 7440-50-8, Copper, uses

RL: ARG (Analytical reagent use); DEV (Device component use); ANST
(Analytical study); USES (Uses)

(divalent; chemical warfare agents and pesticides determination by sol-
gel based charge-transfer optical sensor)

L96 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2003:989820 HCAPLUS Full-text

DN 140:17612

TI Method of measuring sol-gel coating
thickness using infrared absorbance

IN Shelley, Paul H.; Wire, Richard G.; Tomt, Terry C.

PA The Boeing Co., USA

SO U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003230719	A1	20031218	US 2002-171870	20020613 <--
	US 6797958	B2	20040928		
	US 2003232448	A1	20031218	US 2002-329734	20021226 <--
PRAI	US 2002-171579	A2	20020613	<--	
	US 2002-171870	A2	20020613	<--	
	US 2002-171872	A2	20020613	<--	

AB A nondestructive method is provided for efficiently determining thickness of a sol-gel coating formed upon a metallic substrate (e.g., aluminum alloy, titanium alloy). A value of IR energy reflected from the metallic substrate without the sol-gel coating is determined. A value of IR energy reflected from the metallic substrate with the sol-gel coating is determined. A value of IR energy absorbed in the sol-gel coating is determined, and a value of the IR energy absorbed in the sol-gel coating is correlated to a thickness of the sol-gel coating.

IC ICM G01N0021-59

INCL 250341800

CC 42-4 (Coatings, Inks, and Related Products)

Section cross-reference(s): 56

ST metallic substrate sol gel coating thickness

detn IR absorbance; aluminum alloy sol gel

coating thickness detn IR absorbance; titanium alloy sol

gel coating thickness detn IR absorbance

IT IR absorption

(FTIR; determination of sol-gel coating thickness
on metal substrates using IR absorbance)

IT Coating materials

IR absorption

Thickness

(determination of sol-gel coating thickness on
metal substrates using IR absorbance)

IT Metals, miscellaneous

RL: MSC (Miscellaneous)

(determination of sol-gel coating thickness on
metal substrates using IR absorbance)

IT Aluminum alloy, base

Titanium alloy, base

RL: MSC (Miscellaneous)

(determination of sol-gel coating thickness on

metal substrates using IR absorbance)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1972			DE 2252527	
Anon	1974			DE 2252527	
Anon	2001			WO 0192820	HCAPLUS
Brace	1995			US 5381228 A	
Brayden	2000			US 6052191 A	
Carpio	1988			US 4791296 A	
Gold	1991			US 5015856 A	HCAPLUS
Goldberg	1976			US 3973122 A	
Hieftje	1989			US 4800279 A	
Kumar, C	1999	151	280	Applied Surface Scie	HCAPLUS
Kumar, C	2000	60	51	Solar Cells, www.els	
Sharkins	1976			US 3994586 A	
Sharkins	1977			US 4015127 A	
Terasaka	1985			US 4549079 A	
Wolbert	1962			US 3017512 A	

L96 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2003:97857 HCAPLUS Full-text

DN 138:124031

TI Organic-inorganic layer-by-layer multilayer coating system for corrosion resistance of metals

IN Kotov, Nicholas; Knobbe, Edward T.; Kachurina, Olga; Metroke, Tammy L.

PA USA

SO U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 2003027011	A1	20030206	US 2002-60912	20020129 <--
	WO 2003080894	A2	20031002	WO 2002-US2692	20020129 <--
	WO 2003080894	A3	20041028		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002367628	A1	20031008	AU 2002-367628	20020129 <--
PRAI	US 2001-264807P	P	20010129	<--	
	WO 2002-US2692	W	20020129	<--	

AB The organic-inorg. multilayer coating system comprises a nanostructured layer-by-layer hybrid coating for the corrosion inhibition of metals. Electrochem.-active corrosion inhibitors are adsorbed onto a layer-by-layer assembled organic-inorg. multilayer coating, preferably used in combination with a topcoat sol-gel barrier layer, to provide enhanced corrosion protection of metal substrates. A process for improving corrosion resistance of a metal (e.g., aluminum alloy) comprises applying the metal at least one each of alternating layers of an organic species [e.g., poly(acrylic acid)-poly(dimethyldiallylammonium chloride) complex] and an inorg. species (e.g.,

montmorillonite) forming a layer-by-layer assembled film upon the metal, wherein each the layer has an affinity for its adjacent layer; and immersing the assembled film in a solution or dispersion of a corrosion inhibitor (e.g., K₂Cr₂O₇) incorporating into the film.

- IC ICM B32B0007-00
 INCL 428594000; 428608000; 428609000; 428614000
 CC 42-10 (Coatings, Inks, and Related Products)
 Section cross-reference(s): 56, 57
 ST coating multilayer org inorg metal corrosion resistance; corrosion inhibitor multilayer coating metal; topcoat sol gel barrier layer coating
 IT Sol-gel processing
 (coating; organic-inorg. layer-by-layer multilayer coating system for corrosion resistance of metals)
 IT Coating process
 (sol-gel; organic-inorg. layer-by-layer multilayer coating system for corrosion resistance of metals)
 IT 144-62-7D, Ethanedioic acid, derivs. 7440-45-1, Cerium, uses 7440-48-4, Cobalt, uses 7778-50-9, Potassium bichromate 10141-05-6, Cobalt nitrate 16065-83-1, Chromium (III), uses 56258-31-2, Alodine 1200
 RL: MOA (Modifier or additive use); USES (Uses)
 (corrosion inhibitor; organic-inorg. layer-by-layer multilayer coating system for corrosion resistance of metals)
 IT 169501-72-8DP, Tetraethylorthosilicate-3-(trimethoxysilyl)propylmethacrylate-vinyltrimethoxysilane copolymer, hydrolyzed
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (sol-gel; organic-inorg. layer-by-layer multilayer coating system for corrosion resistance of metals)
 L96 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN
 AN 2002:50859 HCAPLUS Full-text
 DN 136:187368
 TI Evaluation of corrosion protection performance of sol-gel surface treatments on AA2024-T3
 AU Voevodin, N. N.; Balbyshev, V. N.; Vreugdenhil, A. J.; Johnson, J. A.; Donley, M. S.
 CS Air Force Research Laboratory, Materials & Manufacturing Directorate, Wright-Patterson Air Force Base, OH, 45433-7750, USA
 SO International SAMPE Technical Conference (2001), 33, 983-997
 CODEN: ISTCEF; ISSN: 0892-2624
 PB Society for the Advancement of Material and Process Engineering
 DT Journal
 LA English
 AB The Air Force requires development of environmentally compliant aircraft coating systems that perform adequately in terms of corrosion protection. Current Air Force corrosion inhibitor paint chemical relies heavily on the use of Cr(VI) compds. in the form of strontium or barium chromate, which are incorporated into both the surface pretreatment and the primers. These corrosion inhibitor systems are very effective, but are known carcinogens and therefore must be eliminated. To address this problem, sol-gel based surface treatments are being investigated as a potential replacement for the current chromate-based approach. Surface modifications based on the conventional epoxy-zirconate sol-gel and the newly developed self-assembled nanophase particle (SNAP) silicon sol-gel coatings have been investigated. The formation of SNAP sol-gel relies on aqueous solution processes to generate nanoscale particles with an inorg. core and an organic exterior. SNAP coatings provide functionality for bonding to appropriate substrates and tailorable chemical for interaction with subsequent polymer layers. Adhesion

and barrier properties of the SNAP sol-gel surface treatment have been compared to the corrosion protection afforded by conventional coating systems. It has been demonstrated in a 2000 h salt spray test that coating systems with SNAP surface treatment perform as well as systems with Alodine pretreatment and a chromated primer. Superior adhesion and corrosion protection characteristics make SNAP surface treatment a promising environmentally benign alternative to chromate pretreatments.

- CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 42
- ST corrosion protection nanostructure silicon sol gel
coating process aircraft
- IT Coating materials
(anticorrosive; corrosion protection performance of sol-gel surface treatments on AA2024-T3)
- IT Sol-gel processing
(coating; corrosion protection performance of sol-gel surface treatments on AA2024-T3)
- IT Aircraft
Nanostructures
Self-assembly
(corrosion protection performance of sol-gel surface treatments on AA2024-T3)
- IT Coating process
(sol-gel; corrosion protection performance of sol-gel surface treatments on AA2024-T3)
- IT 2530-83-8 12616-84-1, AA2024 23519-77-9 104814-65-5
RL: TEM (Technical or engineered material use); USES (Uses)
(corrosion protection performance of sol-gel surface treatments on AA2024-T3)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Amirudin, A	1995	26	1	Progress in Organic	HCAPLUS
Astm	1990			Standard Method of S	
Astm	1990			Standard Practice fo	
Forshee, A	1991	10	45	Metal Finishing	
Isaaks, H	1996	52	63	Corrosion	
Mansfeld, F	1993				
Miller, R	1994	II	1440	NACE	
Mitani, M	1992			US 5132003	HCAPLUS
Murray, J	1989	45	34	Corrosion	HCAPLUS
Ogle, K	1999			Proceedings of the 1	
Popov, B	1993	140	947	J Electrochem Soc	HCAPLUS
Reghi, G	1990			US 4963198	HCAPLUS
Skerry, B	1991			NACE	
Voevodin, N	2001	41	288	Progress in Organic	
Vreugdenhil, A	2001	73	35	Journal of Coatings	HCAPLUS

L96 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:426508 HCAPLUS Full-text

DN 135:228237

TI Application and evaluation of environmentally compliant spray-coated ormosil films as corrosion resistant treatments for aluminum 2024-T3

AU Parkhill, R. L.; Knobbe, E. T.; Donley, M. S.

CS Materials Directorate, Wright Patterson Air Force Base, Wright Laboratory, Dayton, OH, 45433-7750, USA

SO Progress in Organic Coatings (2001), 41(4), 261-265

CODEN: POGCAT; ISSN: 0300-9440

PB Elsevier Science S.A.

DT Journal

LA English

AB An epoxide modified silicate sol-gel film spray coated on an aluminum alloy 2024-T3 coupon was demonstrated to provide exceptional barrier and corrosion protection when compared to chromate-based surface treatments. Surface characterization indicated that the applied film was 2.2 μm thick and crack free. Potentiodynamic evaluation revealed that the film provided a continuous barrier of protection over a broad potential range. Comparison with standard Alodine-1200 type surface treatment indicated several orders of magnitude improvement in barrier protection and enhanced protection under accelerated corrosion test.

CC 42-10 (Coatings, Inks, and Related Products)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon				Blue Ribbon Advisory	
Atik, M	1995	21	403	Ceram Int	HCAPLUS
Brinker, C	1992	147-1	424	J Non-Cryst Solids	HCAPLUS
Brinker, C	1990			Sol-Gel Science	
Guglielmi, M	1997	8	443	J Sol-Gel Sci Techno	HCAPLUS
Parkhill, R	1998			ACER Conference Proc	
Pilzand, M	1997	8	1071	J Sol-Gel Sci Techno	
Shane, M	1990	25	1537	J Mater Sci	HCAPLUS

L96 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:426502 HCAPLUS Full-text

DN 135:228214

TI Testing and evaluation of nonchromated coating systems for aerospace applications

AU Osborne, J. H.; Blohowiak, K. Y.; Taylor, S. R.; Hunter, C.; Bierwagon, G.; Carlson, B.; Bernard, D.; Donley, M. S.

CS The Boeing Company, Seattle, WA, 98124-2499, USA

SO Progress in Organic Coatings (2001), 41(4), 217-225
CODEN: POGCAT; ISSN: 0300-9440

PB Elsevier Science S.A.

DT Journal

LA English

AB The advanced corrosion resistant aircraft coatings program (ACRAC) is part of the Air Force strategy to improve performance and reduce environmental impact of coatings used on Air Force weapon systems. The program addresses the Air Force near and mid-term strategies to eliminate chromate corrosion inhibitors and reduce steps in the outer mold line coating process. Evaluation of the coating process (surface preparation, conversion coating, primer, topcoat) as a system is a key feature of the ACRAC program. The current-state-of-the-art nonchromated coating systems are significantly less effective than those with chromate. A chromate conversion coating is required for the nonchromate primer system to meet min. requirements. Sol-gel-process based conversion coatings can replace chromate conversion coatings provided a chromated primer is used. Several approaches to incorporating inhibitors into sol-gel coatings are discussed. Electrochem. methods for testing coating performance are discussed and a new procedure based on impedance spectroscopy for evaluating active damage repair is presented.

CC 42-4 (Coatings, Inks, and Related Products)

Section cross-reference(s): 76

ST chromated coating primer sol gel process

electrochem method

IT Corrosion inhibitors

(coating containing; testing and evaluation of nonchromated coating systems for aerospace applications)

IT Sol-gel processing
(coating; testing and evaluation of nonchromated coating systems for aerospace applications)

IT Coating process
(sol-gel; testing and evaluation of nonchromated coating systems for aerospace applications)

IT Coating materials
Coating process
Corrosion
Primers (paints)
(testing and evaluation of nonchromated coating systems for aerospace applications)

IT 537-00-8, Cerium acetate 7047-99-6, Cerium oxalate 7778-50-9, Potassium dichromate
RL: MOA (Modifier or additive use); USES (Uses)
(corrosion inhibitor; testing and evaluation of nonchromated coating systems for aerospace applications)

IT 12616-84-1 12627-49-5
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; testing and evaluation of nonchromated coating systems for aerospace applications)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon				Joint Group-pollutio	
Blohowiak, K				US 05814137	HCAPLUS
Blohowiak, K				US 05849110	HCAPLUS
Blohowiak, K				US 05939197	HCAPLUS
Blohowiak, K				US 06037060	HCAPLUS
Blohowiak, K	1996			Nonchemical surface	
Blohowiak, K	1997			Optimization and sca	
Blohowiak, K	1998			Presented at the Wor	
Blohowiak, K	1999			Proceedings of the S	
Brinker, C	1990			Sol--Gel Chemistry	
Du, Y	2001	41	226	Prog Org Coat	
Eden, D	2000			Uhlig's Corrosion Ha	
Grandle, J	1994	50	792	Corrosion	HCAPLUS
Hager, H				US 6077885	HCAPLUS
Hunter, C	2000	56	1059	Corrosion	HCAPLUS
Materials Research Soci		435 a		Proceedings of the S	
Silverman, D	2000			Uhlig's Corrosion Ha	
Spadafora, S	1993			A comparison of sulf	
Wicks, Z	1994	II	179	Organic Coatings: Sc	

L96 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:277428 HCAPLUS Full-text

DN 135:108625

TI A comparative evaluation of corrosion protection of sol-gel based coatings systems

AU Khobaib, M.; Reynolds, L. B.; Donley, M. S.

CS University of Dayton Research Institute, Dayton, OH, 45469-0168, USA

SO Surface and Coatings Technology (2001), 140(1), 16-23

CODEN: SCTEEJ; ISSN: 0257-8972

PB Elsevier Science S.A.

DT Journal

LA English

AB The corrosion prevention behavior of a com. available sol-gel surface pretreatment with six different primers was evaluated using electrochem. impedance spectroscopy. Eighteen different coatings systems were selected for

evaluation. The test panels were prepared in three sep. treatment groups of deoxidization only, Alodine 1200 chromate conversion treatment, and Lord Aeroglaze sol-gel 110 non-chromate surface treatment, followed by six different primer coatings, and a polyurethane top coat. A variety of environmental conditions were generated based on Harrison's solution, salt fog and UV light exposure. Electrochem. impedance measurements were obtained from panels exposed to continuous immersion, alternate immersion in Harrison's solution and an alternate cycle of salt fog and UV chamber. The corrosion behavior of sol-gel based coatings was compared to that of chromate conversion coatings and de-oxidized samples. Scribed panels were also tested to evaluate the corrosion resistance behavior of scratched or cracked coatings. Of all the 18 coatings systems investigated, the E-coat based system showed the best corrosion resistance performance. The sol-gel treated E-coat provided an acceptable corrosion protection level, a barrier resistance of over 108 Ω and performed similar to the conventional chromate system. However, the scribed panel data clearly demonstrates the superior performance of the Alodine 1200 treated systems over the sol-gel based coating systems. Cyclic salt fog/UV exposure did not provide clear discrimination over the alternate immersion test. The scribed panel, on the other hand, did provide a higher degree of discrimination in a short time.

CC 42-4 (Coatings, Inks, and Related Products)
 ST corrosion protection sol gel coating
 IT Coating materials
 (anticorrosive; corrosion protection of sol-gel based coatings)
 IT Sol-gel processing
 (coating; corrosion protection of sol-gel based coatings)
 IT Polymer degradation
 (corrosion protection of sol-gel based coatings)
 IT Coating process
 (sol-gel; corrosion protection of sol-gel based coatings)
 IT 56258-31-2, Alodine 1200
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (corrosion protection of sol-gel based coatings)
 IT 279680-59-0, Mil-P 23377G 349660-76-0, MMS 425 349661-30-9, MIL-P 85582B
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (primer; corrosion protection of sol-gel based coatings)
 IT 349661-31-0, TT-P 2760
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (topcoat; corrosion protection of sol-gel based coatings)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
ASTM				Standard Practice fo	
American Society for Te				Standard Practice fo	
Amirudin, A	1995	26	1	Prog Org Coat	HCAPLUS
Atik, M	1997	8	517	J Sol-gel Sci Techno	HCAPLUS
Barrow, D	1990	122-1	443	Key Eng Mater	
De Santics, O	1990	121	338	J Non-Cryst Solids	
General Motors Corporat				Accelerated Corrosio	
Guglielmi, M	1997	8	443	J Sol-gel Sci Techno	HCAPLUS

Jeffcoate, C	1997	6	417	J Mater Eng Perform	HCAPLUS
Jeffcoate, C	1998			Proceedings of 43rd	
Kato, K	1993	28	4033	J Mater Sci	HCAPLUS
Lizlovs, E	1976	32	263	Corrosion	HCAPLUS
Macdonald, J	1987			Impedance Spectroscopy	
Mansfeld, F	1993			Issue AA: Schlumberger	
Parkhill, R	1997			Proceedings of Tri-S	
Reynolds, L	1997			Proceedings of Tri-S	
Reynolds, L	1997	32	31	Prog Org Coat	HCAPLUS
Sax, N	1993			Dangerous Properties	
Schmidt, H	1990	121	428	J Non-Cryst Solids	HCAPLUS
Sugama, T	1993	27	1723	J Mater Sci	
Taylor, S	1989	24		IEEE Trans Electr In	HCAPLUS
Vukasovich, M	1977	54	437	J Less-Common Met	

L96 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:267834 HCAPLUS Full-text

DN 135:37513

TI X-ray spectroscopic investigation of the Zr-site in thin film sol-gel surface preparations

AU Greigor, R. B.; Blohowiak, K. Y.; Osborne, J. H.; Krienke, K. A.; Cherian, J. T.; Lytle, F. W.

CS The Boeing Company, Seattle, WA, 98124, USA

SO Journal of Sol-Gel Science and Technology (2001), 20(1), 35-50
CODEN: JSGTEC; ISSN: 0928-0707

PB Kluwer Academic Publishers

DT Journal

LA English

AB XPS and x-ray absorption spectroscopy (XAS) measurements were made on thin film (.apprx.1000 Å) sol-gel adhesion promoting surface treatments. These silicon/zirconium-containing sol-gel coatings are possible replacement processes for traditional surface preps. that use environmentally undesirable and potentially toxic materials. The sol-gels were waterborne mixts. formulated with tetra-n-propoxyzirconium (TPOZ) and a silane, either 3-glycidoxypopyl-trimethoxysilane (GTMS) or 3-aminopropyl-triethoxysilane (APS). Results show that dried sol-gel powders formulated with TPOZ or TPOZ + GTMS have longer Zr-O bond lengths (.apprx.2.18 Å, CN 7 or 8) than the TPOZ + silane + metal substrate samples (.apprx.2.10 Å, CN 6). The fraction (+/- 0.10) of Zr in a short bonded 6-fold site is highest (0.80) for TPOZ + (APS or GTMS) on (Ti or Al), at an intermediate value (0.40) for TPOZ on Ti and low (0.10) for the powders. For sol-gels deposited on a metal substrate, there are indications of a chemical bond between the thin film sol-gel and the metal substrate. The TPOZ + APS coatings on Ti data suggest that this Zr-O-Ti bond is present with a Zr-Ti separation of .apprx.3.5 Å. Only subtle differences were observed in the near-neighbor bonding due to curing treatment variations from room temperature to .apprx.125°C, alloy substrate variations (Ti-6Al-4V/Al 2024), and age of the deposited sol-gel coating (up to 1 yr).

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 56, 73

ST zirconium silicon sol gel prepn coating

titanium aluminum

IT Bond length

Coating materials

EXAFS spectra

Sol-gel processing

X-ray photoelectron spectra

XANES spectra

(x-ray spectroscopic investigation of the Zr-site in thin film sol-gel surface preps.)

IT 7429-90-5, Aluminum, processes 7440-32-6, Titanium, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(substrates; x-ray spectroscopic investigation of the Zr-site in thin film sol-gel surface preps.)

IT 919-30-2, 3-Aminopropyl-triethoxysilane 2530-83-8, 3-Glycidoxypopyl-trimethoxysilane 23519-77-9, Tetrapropoxyzirconium

RL: RCT (Reactant); RACT (Reactant or reagent)
(x-ray spectroscopic investigation of the Zr-site in thin film sol-gel surface preps.)

IT 7429-90-5, Aluminum, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(substrates; x-ray spectroscopic investigation of the Zr-site in thin film sol-gel surface preps.)

RN 7429-90-5 HCAPLUS

CN Aluminum (CA INDEX NAME)

Al

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Antonioli, G	1994	177	179	J Non-Cryst Sol	HCAPLUS
Blohowiak, K	1996			Nonchemical surface	
Blohowiak, K	1997			Optimization and sca	
Brinker, C	1991			Sol-Gel Chemistry	
Cotton, F	1980			Advanced Inorganic C	
Deiseroth, V	1970	375	150	Zeitschrift fur anor	
Douy, A	1995	1	139	Fourth Euro Ceramics	
Esquivias, L	1996	239	71	J Alloys and Compoun	HCAPLUS
Farges, F	1991	76	60	Am Min	HCAPLUS
Helmerich, A	1994	29	1393	J Matl Sci	
Koningsberger, D	1988			X-rays Absorption: P	
Lopez, T	1995	125	217	Appl Catal A: Genera	HCAPLUS
Lytle, F	1989		135	Applications of Sync	
Lytle, F	1989	B158	701	Physica	
McCullough, J	1959	12	507	Acta Cryst	HCAPLUS
McMaster, W	1969			Compilation of X-ray	
Moon, S	1997	B101	369	J Phys Chem	
Mosset, A	1996	6	1527	J Mater Chem	HCAPLUS
Noll, W	1968			Chemistry and Techno	
Novak, G	1971	56	791	Am Min	HCAPLUS
Okasaka, K	1991	136	103	J Non-Cryst Sol	HCAPLUS
Peter, D	1994	3	91	J Sol-Gel Sci and Te	HCAPLUS
Peter, D	1995	5	5	J Sol-Gel Sci and Te	
Plueddeman, M	1991		139	Silane Coupling Agen	
Ravel, B	1995			ATOMS 2.46	
Rossell, H	1980	283	282	Nature	HCAPLUS
Sanchez, C	1992	147 &	1	J Non-Cryst Sol	
Shannon, R	1969	B25	925	Acta Cryst	
Singer, J	1959	12	719	Acta Cryst	HCAPLUS
Stachs, O	1995		175	SSRL Activity Report	
Wyckoff, R	1963	II		Crystal Structures	
Zabinsky, S	1995	B52	2995	Phys Rev	

L96 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:25634 HCAPLUS Full-text

DN 134:80293

TI Chemical preconcentrator with applications to chemical sensing and analysis
 IN Manginell, Ronald P.; Frye-mason, Gregory C.
 PA Sandia Corporation, USA
 SO U.S., 23 pp.
 CODEN: USXXAM
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6171378	B1	20010109	US 1999-369664	19990805 <--
PRAI	US 1999-369664		19990805	<--	

AB A chemical preconcentrator is disclosed with applications to chemical sensing and anal. The preconcentrator can be formed by depositing a resistive heating element (e.g. platinum) over a membrane (e.g. silicon nitride) suspended above a substrate. A coating of a sorptive material (e.g. a microporous hydrophobic sol-gel coating or a polymer coating) is formed on the suspended membrane proximate to the heating element to selective sorb one or more chemical species of interest over a time period, thereby concentrating the chemical species in the sorptive material. Upon heating the sorptive material with the resistive heating element, the sorbed chemical species are released for detection and anal. in a relatively high concentration and over a relatively short time period. The sorptive material can be made to selectively sorb particular chemical species of interest while not substantially sorbing other chemical species not of interest. The present invention has applications for use in forming high-sensitivity, rapid-response miniaturized chemical anal. systems (e.g. a chemical laboratory on a chip).

IC ICM B01D0053-04

INCL 096143000

CC 79-2 (Inorganic Analytical Chemistry)
 Section cross-reference(s): 59, 80

IT Sol-gel processing
 (coating; design and fabrication of preconcentrator for gas anal. applications)

IT Coating process
 (sol-gel; design and fabrication of preconcentrator for gas anal. applications)

IT 7429-90-5, Aluminum, uses 7439-98-7, Molybdenum, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-21-3, Silicon, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-47-3, Chromium, uses 7440-57-5, Gold, uses
 RL: DEV (Device component use); USES (Uses)
 (design and fabrication of preconcentrator for gas anal. applications)

IT 7429-90-5, Aluminum, uses
 RL: DEV (Device component use); USES (Uses)
 (design and fabrication of preconcentrator for gas anal. applications)

RN 7429-90-5 HCAPLUS

CN Aluminum (CA INDEX NAME)

A1

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Barnes	1986			US 4599095	HCAPLUS

Bein	1992			US 5151110	HCAPLUS
Bosman, J	1992	31	9	Sensors and Actuator	
Frye	1993			US 5224972	HCAPLUS
Frye	1996			US 5589396	HCAPLUS
Frye, G	1990		61	Proceedings of the 1	
Laermer	1996			US 5501893	HCAPLUS
Mastrangelo, C	1991	26	1998	IEEE Journal of Soli	
Nickerson	1998			US 5720798	HCAPLUS
Nieuwenhuizen, M	1989	5	261	Sensors and Material	
Odensheimer	1984			US 4433982	HCAPLUS
Pribat	1992			US 5087275	HCAPLUS
Raman	1998			US 5770275	HCAPLUS
Terry, S	1979	ED-26	1881	IEEE Transactions on	
Walters	1999			US 5939614	HCAPLUS

L96 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1999:172649 HCAPLUS Full-text

DN 130:220147

TI Sol-gel matrixes and their preparation for direct colorimetric detection of analytes

IN Charych, Deborah H.; Sasaki, Darryl; Yamanaka, Stacey

PA Regents of the University of California, USA

SO PCT Int. Appl., 79 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 11

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9910743	A1	19990304	WO 1998-US17982	19980831 <--
	W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6022748	A	20000208	US 1997-920501	19970829 <--
	CA 2301561	A1	19990304	CA 1998-2301561	19980831 <--
	AU 9892116	A	19990316	AU 1998-92116	19980831 <--
	EP 1002234	A1	20000524	EP 1998-944612	19980831 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	MX 200002062	A	20001030	MX 2000-2062	20000228 <--
PRAI	US 1997-920501	A	19970829	<--	
	WO 1998-US17982	W	19980831	<--	

AB The present invention relates to methods and compns. for the direct detection of analytes using color changes that occur in immobilized biopolymeric material in response to selective binding of analytes to their surface. In particular, the present invention provides methods and compns. related to the encapsulation of biopolymeric material into metal oxide glass using the sol-gel method. Liposomes of sialic acid-linked 5,7-docosadiynoic acid polymer entrapped in silicate glass provided a vivid colorimetric response to influenza A virus.

IC ICM G01N0033-546

ICS G01N0033-552

CC 9-1 (Biochemical Methods)

Section cross-reference(s): 79, 80

ST sol gel matrix colorimetry analyte; biopolymer

encapsulation metal oxide glass color sensor; influenza virus colorimetry
docosadiynoate polymer silicate glass

IT Amines, biological studies

RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); DEV (Device component use); RCT
(Reactant); ANST (Analytical study); BIOL (Biological study); PROC
(Process); RACT (Reactant or reagent); USES (Uses)
(allyl, biopolymers from, immobilization of, in metal oxide glasses;
sol-gel matrixes and their preparation for direct
colorimetric detection of analytes)

IT Immobilization, biochemical

(antibody, in metal oxide glasses; **sol-gel** matrixes
and their preparation for direct colorimetric detection of analytes)

IT Bacteria (Eubacteria)

Molecules

Pathogen

(as analytes; **sol-gel** matrixes and their preparation for
direct colorimetric detection of analytes)

IT Antibodies

Enzymes, analysis

RL: ANT (Analyte); ANST (Analytical study)

(as analytes; **sol-gel** matrixes and their preparation for
direct colorimetric detection of analytes)

IT Apparatus

(badge, biopolymer encapsulated in **sol-gel** glass
as; **sol-gel** matrixes and their preparation for direct
colorimetric detection of analytes)

IT Ligands

RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); DEV (Device component use); ANST
(Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(biopolymer containing, immobilization of, in metal oxide glasses;
sol-gel matrixes and their preparation for direct
colorimetric detection of analytes)

IT Self-assembly

(biopolymers from monomers undergoing, immobilization of, in metal
oxide glasses; **sol-gel** matrixes and their preparation
for direct colorimetric detection of analytes)

IT Imides

Polydiacetylenes

Polyolefins

Siloxanes (nonpolymeric)

Urethanes

RL: ARG (Analytical reagent use); BPR (Biological process); BSU
(Biological study, unclassified); DEV (Device component use); RCT
(Reactant); ANST (Analytical study); BIOL (Biological study); PROC
(Process); RACT (Reactant or reagent); USES (Uses)
(biopolymers from, immobilization of, in metal oxide glasses;
sol-gel matrixes and their preparation for direct
colorimetric detection of analytes)

IT Toxins

RL: ANT (Analyte); ANST (Analytical study)

(cholera, detection of, with **sol-gel** encapsulated
sialic acid-linked polydiacetylene; **sol-gel**
matrixes and their preparation for direct colorimetric detection of
analytes)

IT Molecular recognition

(complexes from, immobilization of, in metal oxide glasses; **sol**
-gel matrixes and their preparation for direct colorimetric
detection of analytes)

- IT Influenza A virus
(detection of, with sol-gel encapsulated sialic acid-linked polydiacetylene; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Oxides (inorganic), biological studies
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(glasses, immobilization of biopolymers in; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Molecules
(hydrophilic, immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Molecules
(hydrophobic, immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Chelating agents
Chromophores
Drugs
Electron acceptors
Electron donors
Films
Liposomes
(immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Receptors
RL: ANT (Analyte); ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Antigens
Biopolymers
Carbohydrates, biological studies
Nucleic acids
Peptides, biological studies
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Buffers
Sonication
(in immobilization of biopolymers in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in immobilization of biopolymers in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)

- IT Immobilization, biochemical
(of biopolymers in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Polymers, biological studies
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(polythiophenes, biopolymers from, immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Oscillators
(quartz; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Membranes, nonbiological
(receptors or fragments of, as analytes; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Analysis
Colorimetry
Electrodes
Gas analysis
Optical fibers
Pharmaceutical analysis
Scintillation
Spectroscopy
(sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Glass, biological studies
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(sol-gel, biopolymer encapsulated in; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT Analytical apparatus
(supported metal oxide glass-immobilized biopolymers; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 1132-61-2, 3-[N-Morpholino]propanesulfonic acid
RL: NUU (Other use, unclassified); USES (Uses)
(as buffer in immobilization of biopolymers in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 62-53-3D, Aniline, compds. 79-06-1D, Acrylamide, compds. 109-93-3, Vinylether 109-97-7D, Pyrrole, compds. 110-02-1D, Thiophene, compds. 1121-34-2, Malic anhydride 18358-13-9D, Methacrylate, compds., biological studies 19295-34-2 66990-32-7, 10,12-Pentacosadiynoic acid 138305-24-5, 5,7-Pentacosadiynoic acid 178560-65-1, 5,7-Docosadiynoic acid
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(biopolymers from, immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 221056-30-0
RL: PEP (Physical, engineering or chemical process); PROC (Process)

- (films; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 681-84-5D, Tetramethylorthosilicate, glasses
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(immobilization of biopolymers in; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 58-85-5, Biotin
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); DEV (Device component use); RCT (Reactant); ANST (Analytical study); BIOL (Biological study); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(immobilization of, in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 7647-01-0, Hydrochloric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in immobilization of biopolymers in metal oxide glasses; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 136766-21-7P 146064-08-6P 146064-09-7P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(in sialic acid ligand attachment to diacetylene; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 37758-47-7, Ganglioside GM1
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(liposomes of or polymerized diacetylene containing; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 66990-33-8D, sialic acid-linked 212955-17-4D, sialic acid-linked
RL: ARG (Analytical reagent use); BPR (Biological process); BSU (Biological study, unclassified); PRP (Properties); ANST (Analytical study); BIOL (Biological study); PROC (Process); USES (Uses)
(liposomes, entrapped in sol-gel glass, influenza virus effect on; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 27987-87-7P, Diacetylene polymer
RL: SPN (Synthetic preparation); PREP (Preparation)
(liposomes, sol-gel-entrapped; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 108-24-7 6066-82-6, N-Hydroxysuccinimide 136766-23-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, in sialic acid ligand attachment to diacetylene; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 141-43-5DP, Ethanolamine, reaction products with N-hydroxysuccinimide-modified diacetylene derivative polymers 929-75-9DP, Tetraethylene glycol diamine, reaction products with N-hydroxysuccinimide-modified diacetylene derivative polymers
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(reaction of, in sialic acid ligand attachment to diacetylene; sol-gel matrixes and their preparation for direct colorimetric detection of analytes)
- IT 460-12-8, Diacetylene

RL: RCT (Reactant); RACT (Reactant or reagent)
 (sialic acid ligand attachment to; sol-gel matrixes
 and their preparation for direct colorimetric detection of analytes)

IT 56-23-5, Carbon tetrachloride, analysis 60-29-7, Diethylether, analysis
 67-66-3, analysis 71-36-3, 1-Butanol, analysis 71-43-2, Benzene,
 analysis 75-09-2, Dichloromethane, analysis 108-88-3, Toluene,
 analysis 110-82-7, Cyclohexane, analysis 111-27-3, 1-Hexanol, analysis
 111-87-5, 1-Octanol, analysis

RL: ANT (Analyte); ANST (Analytical study)
 (sol-gel encapsulated polydiacetylene response to;
 sol-gel matrixes and their preparation for direct
 colorimetric detection of analytes)

IT 460-12-8D, Diacetylene, derivs., polymers, sialic acid derivs.
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU
 (Biological study, unclassified); PRP (Properties); ANST (Analytical
 study); BIOL (Biological study); PROC (Process); USES (Uses)
 (sol-gel matrixes and their preparation for direct
 colorimetric detection of analytes)

IT 7647-01-0, Hydrochloric acid, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (in immobilization of biopolymers in metal oxide glasses; sol
 -gel matrixes and their preparation for direct colorimetric
 detection of analytes)

RN 7647-01-0 HCAPLUS
 CN Hydrochloric acid (CA INDEX NAME)

HCl

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Dave	1994	66	1120	Analytical Chemistry	
Ducheyne	1997			US 5591453 A	HCAPLUS
Dunn	1993			US 5200334 A	HCAPLUS
Ellerby	1992	255	1113	Science	HCAPLUS
Miller	1996	202	279	Journal of Non-Cryst	HCAPLUS
Pan	1997	13	1365	Langmuir	HCAPLUS
Reichert	1995	117	829	Journal of the Ameri	HCAPLUS
Yamanaka	1995	117	9095	Journal of the Ameri	HCAPLUS
Yamanaka	1997	13	5049	Langmuir	HCAPLUS
Zink	1991	455	541	ACS Symposium Series	HCAPLUS

L96 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1998:534483 HCAPLUS Full-text

DN 129:192331

TI Gasochromic effect in platinum-doped tungsten trioxide films prepared by
the sol-gel method

AU Zayat, M.; Reisfeld, R.; Minti, H.; Orel, B.; Svegl, P.

CS Inorganic and Analytical Chemistry Department, Hebrew University of
Jerusalem, Jerusalem, 9 1904, IsraelSO Journal of Sol-Gel Science and Technology (1998), 11(2), 161-168
CODEN: JSGTEC; ISSN: 0928-0707

PB Kluwer Academic Publishers

DT Journal

LA English

- AB Tungsten oxide doped by a complex of platinum exhibits a gasochromic effect.. A reversible coloration is observed on successive exposure to hydrogen and air. The films were prepared by the sol-gel method at room temperature. They showed strong darkening (blue color) on exposure to hydrogen and were bleached completely when exposed to air. The process has been reproduced completely hundreds of times without any losses.. The cycling of the coloration was obtained from UV-visible spectra and the mechanism deduced from both visible and Fourier transform IR (FTIR) spectra. Colorimetric properties of the gasochromic films were expressed in color space chromaticity diagram.
- CC 57-1 (Ceramics)
Section cross-reference(s): 73
- IT Sol-gel processing
(coating; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT Air
(exposure to; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT Colorimetry
UV and visible spectra
(gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT Optical films
(gasochromic; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT Coloring
(reversible; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT Coating process
(sol-gel; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT 7440-06-4, Platinum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT 1333-74-0, Hydrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(exposure to; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)
- IT 1314-35-8, Tungsten trioxide, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(films, platinum-doped; gasochromic effect in platinum-doped tungsten trioxide films prepared by sol-gel method on glass substrates)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Adachi, G	1986	116	L13	J Less Comm Met	HCAPLUS
Benson, J	1966	5	307	J Catal	HCAPLUS
Billmeyer, F	1981		47	Principles of Color	
Boudart, M	1969	64	171	Z Physik Chem Neue F	HCAPLUS
Daniel, M	1987	67	235	J Solid State Chem	HCAPLUS
Daniel, M	1988	73	127	J Solid State Chem	HCAPLUS
Delichere, P	1988	16	35	Thin Solid Films	
Furuta, T	1981	20	L768	Jpn J Appl Phys	HCAPLUS
Hobbs, B	1972	119	583	J Electrochem Soc	
Ito, K	1992	60	938	Appl Phys Lett	HCAPLUS

Ito, K	1984		153	Proceedings of the 4	
Khoobiar, S	1964	68	411	J Phys Chem	HCAPLUS
Kohn, H	1964	145	149	Science	HCAPLUS
Namba, T	1991	6	1324	J Mater Res	
Orel, B	1994	175	251	J Non-Cryst Solids	HCAPLUS
Reisfeld	1992	77		Structure and Bondin	HCAPLUS
Reisfeld	1996	85		Structure and Bondin	
Shimomura, T	1987	26	L229	Jpn J Appl Phys	
Shirai, H	1990	159	L17	J Less Comm Met	HCAPLUS

L96 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1997:424385 HCAPLUS Full-text

DN 127:184941

TI Sol-gel entrapped materials for optical sensing of solvents and metal ions

AU Wallington, Sally-Ann; Labayen, Telmo; Poppe, Andrea; Sommerdijk, Nico A. J. M.; Wright, John D.

CS Centre for Materials Research, Department of Chemistry, University of Kent, Canterbury Kent, CT2 7NH, UK

SO Sensors and Actuators, B: Chemical (1997), B38(1-3), 48-52
CODEN: SABCEB; ISSN: 0925-4005

PB Elsevier

DT Journal

LA English

AB The preparation and characterization of sol-gel composites for fluorescent detection of solvents (using dansyl-labeled β -cyclodextrin) and Al^{3+} ions (using Morin), and for colorimetric detection of Cu^{2+} (using Eriochrome Cyanine R) is described. The active roles played by both the entrapped reagent and the sol-gel matrix in the sensing processes are discussed.

CC 79-3 (Inorganic Analytical Chemistry)
Section cross-reference(s): 80

ST sol gel entrapped reagent optical sensing; solvent sensing sol gel entrapped reagent; element sensing sol gel entrapped reagent

IT Colorimetry

Fluorometry

Solvents

(sol-gel entrapped materials for optical sensing of solvents and metal ions)

IT Sol-gel processing

(sol-gel entrapped reagents for optical sensing of solvents and metal ions)

IT Reagents

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(sol-gel entrapped reagents for optical sensing of solvents and metal ions)

IT 7585-39-9, β -Cyclodextrin

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(dansyl-labeled; sol-gel entrapped materials for fluorescent detection of solvents)

IT 7440-50-8, Copper, analysis

RL: ANT (Analyte); ANST (Analytical study)
(sol-gel entrapped Eriochrome Cyanine R for colorimetric detection of copper)

IT 3564-18-9, Eriochrome Cyanine R

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(sol-gel entrapped Eriochrome Cyanine R for colorimetric detection of copper)

IT 189942-66-3

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)

(sol-gel entrapped materials for fluorescent detection of solvents)

IT 7429-90-5, Aluminum, analysis
 RL: ANT (Analyte); ANST (Analytical study)
 (sol-gel entrapped morin for fluorescent detection of aluminum)

IT 480-16-0, Morin
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
 (sol-gel entrapped morin for fluorescent detection of aluminum)

IT 7429-90-5, Aluminum, analysis
 RL: ANT (Analyte); ANST (Analytical study)
 (sol-gel entrapped morin for fluorescent detection of aluminum)

RN 7429-90-5 HCAPLUS
 CN Aluminum (CA INDEX NAME)

A1

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Dunn, B	1991	1	903	J Mater Chem	HCAPLUS
Marczenko, Z	1976		51	Spectrophotometric D	
Narang, U	1993	47	1700	Appl Spectrosc	HCAPLUS
Phillips, C	1966	II	83	Inorganic Chemistry	
Quinson, J	1986	79	397	J Non-Cryst Solids	HCAPLUS
Venema, F	1996			Ph D Thesis, Univers	
Wallington, S	1996			J Sol-Gel Sci Techno	

L96 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1997:226474 HCAPLUS Full-text

DN 126:206845

TI Chelating behavior between metal ions and EDTA in sol-gel matrix

AU Zaitoun, Mohammed A.; Lin, C. T.

CS Department of Chemistry, Northern Illinois University, DeKalb, IL, 60115-2862, USA

SO Journal of Physical Chemistry B (1997), 101(10), 1857-1860

CODEN: JPCBFK; ISSN: 1089-5647

PB American Chemical Society

DT Journal

LA English

AB Ethylenediamine tetraacetic acid (EDTA) was encapsulated in a sol-gel-derived optically transparent glass. The complexation of metal cations, Cu(II), Ni(II), Fe(III), Cr(III), Co(II), Mn(II), Pd(II), and Ir(IV), with EDTA in solns. and in gels was evidenced by the formation of individual colors. A comparison of the absorption spectra of Mn²⁺/EDTA in solution, Mn²⁺/EDTA in gel, and Mn²⁺/EDTA complex in gel was performed. (i) all six chelating sites in EDTA remain active in a sol-gel matrix as they bind readily with Cu²⁺, Ni²⁺, Fe³⁺, Pd²⁺, and Ir⁴⁺, (ii) EDTA is rigidly oriented in a sol-gel matrix that inhibits its heat- or catalyst-assisted complexation with Cr³⁺, Co²⁺, and Mn²⁺, (iii) no absorption spectral shift for the d-d metal transitions was observed compared to those in solution, yet a 10-30 nm shift for the MLCT transitions of Cu²⁺, Ni²⁺, Fe³⁺, Pd²⁺, Ir⁴⁺ was detected, and (iv) the level of sensitivity in detecting metal cations using EDTA in gel is at least an

order of magnitude higher than that in solution. The response time of Mn²⁺/EDTA complexation in gel is quite short, ranging from 1/30 to 15 min. This response time and the mode of sensing device guarantee that no leaching of EDTA from the sol-gel matrix is possible.

- CC 79-4 (Inorganic Analytical Chemistry)
 ST chelation metal EDTA sol gel matrix; gel EDTA doped
 metal cation detection
 IT Colorimetry
 (colorimetric detection of metal cations in EDTA doped silica gel)
 IT Glass, analysis
 RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified);
 PRP (Properties); ANST (Analytical study); USES (Uses)
 (silica; chelating behavior between metal ions and EDTA in sol
 -gel matrix)
 IT 60-00-4, EDTA, uses
 RL: ARG (Analytical reagent use); PRP (Properties); ANST (Analytical
 study); USES (Uses)
 (FTIR spectra of EDTA and chelating behavior between metal ions and
 EDTA in sol-gel matrix)
 IT 7439-88-5, Iridium, analysis 7439-89-6, Iron, analysis 7439-96-5,
 Manganese, analysis 7440-02-0, Nickel, analysis 7440-05-3, Palladium,
 analysis 7440-47-3, Chromium, analysis 7440-48-4, Cobalt, analysis
 7440-50-8, Copper, analysis
 RL: ANT (Analyte); PRP (Properties); ANST (Analytical study)
 (cationic; chelating behavior between metal ions and EDTA in
 sol-gel matrix)

L96 ANSWER 16 OF 16 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1992:219769 HCAPLUS Full-text

DN 116:219769

TI Sensor for impurity determination in molten metal

IN Inoue, Mamoru; Watanabe, Hidemi; Kamiyama, Hisaaki

PA Nippon Steel Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 03229146	A	19911011	JP 1990-22072	19900202 <--
PRAI	JP 1990-22072		19900202	<--	

AB The impurity, e.g., Si, Mn, Al, or C, in molten metal is determined with a fast responding sensor having a thin film of a stable solid electrolyte on an electrode and prepared from a metal alkoxide by the sol-gel method. A lead rod of the sensor is coated with a powder mixture of metal and metal oxide to form an O standard electrode, which is coated with the solid electrolyte containing the oxide of the impurity to be determined. The solid electrolyte is prepared from a mixture containing Zr alkoxide, ZrO₂, and a metal alkoxide for stabilizing ZrO₂.

IC ICM G01N0027-411

CC 56-13 (Nonferrous Metals and Alloys)

IT 7429-90-5, Aluminum, uses 7439-96-5, Manganese, uses
 7440-21-3, Silicon, uses 7440-44-0, Carbon, uses

RL: USES (Uses)

(impurity, determination of, in molten metal, fast responding solid
 electrolyte
 sensor for)

IT 7429-90-5, Aluminum, uses

RL: USES (Uses)

(impurity, determination of, in molten metal, fast responding solid electrolyte

sensor for)

RN 7429-90-5 HCAPLUS

CN Aluminum (CA INDEX NAME)

Al

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FILE LAST UPDATED: 6 JUL 2007 <20070706/UP>

MOST RECENT THOMSON SCIENTIFIC UPDATE: 200743 <200743/DW>

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<http://scientific.thomson.com/support/patents/coverage/latestupdates/>

>>> FOR DETAILS ON THE NEW AND ENHANCED DERWENT WORLD PATENTS INDEX PLEASE SEE

http://www.stn-international.de/stndatabases/details/dwpi_r.html <<<

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=> d bib ab tech abex tot

L111 ANSWER 1 OF 8 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2005-532133 [54] WPIX Full-text

DNC C2005-161308 [54]

DNN N2005-435694 [54]

TI Testing for presence of coating, e.g. sol-gel coating on aircraft parts, by placing test specimen of unknown coating in receptacle containing mixed solution, and timing an event to make determination

DC J04; M14; S03

IN DAVIS B R; JONES S R; TOMT T C; WIRE R

G

PA (BOEI-C) BOEING CO

CYC 37

PIA US 20050158862 A1 20050721 (200554)* EN 10[1]

EP 1557668 A1 20050727 (200554) EN

ADT US 20050158862 A1 US 2004-762073 20040120; EP 1557668 A1 EP

2004-78401 20041215

PRAI US 2004-762073 20040120

AB US 20050158862 A1 UPAB: 20051223

NOVELTY - Testing for the presence of a coating comprises placing a mixed solution in a receptacle, placing a test specimen of unknown coating in the receptacle, and timing an event to make a determination of whether or not the coating is present..

USE - The invention is used for testing for the presence of a coating, e.g. sol-gel coating on aluminum (claimed) on, e.g. aircraft parts particularly fasteners such as rivets.

ADVANTAGE - The invention provides a quick, easy, and reliable way to verify the presence of the coating. DESCRIPTION OF DRAWINGS - The figure shows a flowchart diagram of the inventive method.

TECH

INSTRUMENTATION AND TESTING - Preferred Method: Timing comprises making a determination of whether or not a sol-gel coating is present. An indicating solution from water and an ingredient comprising ammonium molybdate, sodium molybdate, or potassium molybdate is prepared. An etching solution from water and an ingredient comprising hydrochloric acid, or hydrobromic acid, is prepared. Preferred Parameter: The event is a change in color of the test specimen to blue, or no change in color of the test specimen after a pre-determined amount of time. The event is the mixed solution becoming opaque.

L111 ANSWER 2 OF 8 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 AN 2004-821707 [81] WPIX Full-text
 DNC C2004-285743 [81]
 DNN N2004-648688 [81]
 TI Charge-transfer chemical sensor for detecting and indicating presence of chemical(s), e.g. agricultural pesticides, has sol-gel material affixable to predetermined surface, and indicator for detecting and signaling presence of chemical
 DC B07; C07; E19; J04; K02; S03; W07
 IN LIN C
 PA (UYN1-N) UNIV NORTHERN ILLINOIS; (LINC-I) LIN C
 CYC 104
 PIA WO 2004099754 A2 20041118 (200481)* EN 41[6]
 AU 2003304095 A1 20041126 (200510) EN
 AU 2003304095 A8 20051117 (200638) EN
 US 20060154414 A1 20060713 (200646) EN
 ADT WO 2004099754 A2 WO 2003-US41000 20031218; AU 2003304095 A1
 AU 2003-304095 20031218; AU 2003304095 A8 AU 2003-304095
 20031218; US 20060154414 A1 Provisional US 2002-437311P
 20021230; US 20060154414 A1 WO 2003-US41000 20031218; US
 20060154414 A1 US 2005-540607 20051026
 FDT AU 2003304095 A1 Based on WO 2004099754 A; AU 2003304095 A8 Based on
 WO 2004099754 A
 PRAI US 2002-437311P 20021230
 US 2005-540607 20051026
 AB WO 2004099754 A2 UPAB: 20050707
 NOVELTY - A charge-transfer chemical sensor comprises a sol-gel material affixable to a predetermined surface, and indicator within the sol-gel for detecting and signaling a presence of at least one chemical.
 DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for: (a) a method of detecting a presence of at least one chemical by applying the detector to a predetermined surface of an object, and indicating on the detector the presence of at least one chemical; (b) a method of making a chemical sensor by encapsulating within a sol-gel a detector capable of detecting and signaling a presence of at least one chemical; and (c) a decontaminating agent for removing contaminants from an area, comprising a sol-gel materials affixable to a predetermined surface, and decontaminating mechanism having an affinity for the contaminant within the sol-gel for decontaminating at least one chemical present in the area.

USE - The sensor is for detecting and indicating the presence of at least one chemical, e.g. chemical warfare agents, agricultural pesticides, or insecticides. The sensor is capable of sensing the presence of at least one specific compound, e.g. airborne gas or other form of compound.

ADVANTAGE - The sensor provides the cost-efficiency, stability, accuracy, reliability, reproducibility, and robustness. It can be miniaturized with controlled shapes and does not rely on an energy source and can be coated on a predetermined surface. The sensor provides a decontaminant that cleanses the air and/or surface of the compound by capturing the compound without creating toxic byproducts.

TECH

INSTRUMENTATION AND TESTING - Preferred Component: The indicator includes colorimetric signal mechanism for signaling the presence of at least one chemical. The signal mechanism is an indicator with copper (Cu) (II), an indicator with a Lewis acid, Cu²⁺/propylethylenediamine triacetate (PEDTA), bovine copper- zinc superoxide dismutase (CuZnSOD), nickel (Ni²⁺)/dimethylglyoxime, thymol blue/Fichlor, thymol blue/sarinase, thymol blue/somanase, or thymol blue/parathion hydrolase.

POLYMERS - Preferred Material: The sol-gel is an optically transparent xerogel.

INORGANIC CHEMISTRY - Preferred Material: The decontaminating mechanism is at least one nanoparticle heterogeneous catalyst.

L111 ANSWER 3 OF 8 WPIX COPYRIGHT 2007

THE THOMSON CORP on STN

AN 2004-667489 [65] WPIX Full-text

CR 2004-089136

DNC C2005-017183 [06]

DNN N2005-042995 [06]

TI Continuous surface preparation for metal material e.g. titanium comprises grit blasting metal, rinsing with water, subjecting to caustic solution, rinsing with water, and applying sol-gel coating and liquid adhesive coating

DC A82; E19; G02; M14; P42

IN ANDERSON R A; ARTHUR S E; BLOHOWIAK K Y; GRACE W B H; HANSEN D M; JONES S R; TILLMAN M S; WIRE R G

PA (ANDE-I) ANDERSON R A; (ARTH-I) ARTHUR S E; (BLOH-I) BLOHOWIAK K Y; (GRAC-I) GRACE W B H; (HANS-I) HANSEN D M; (JONE-I) JONES S R; (TILL-I) TILLMAN M S; (WIRE-I) WIRE R G

CYC 1

PIA US 20040178178 A1 20040916 (200465)* EN 8[3]

ADT US 20040178178 A1 CIP of US 2002-143391 20020509; US 20040178178 A1 US 2004-751303 20040102

PRAI US 2004-751303 20040102

US 2002-143391 20020509

AB US 20040178178 A1 UPAB: 20050706

NOVELTY - Continuous surface preparation for a metal material comprises: (i) grit blasting the metal material with fine particles of aluminum oxide in air and water;

(ii) water rinsing;

(iii) subjecting the metal to a caustic solution of sodium hydroxide; (iv) water rinsing;

(v) applying a sol-gel coating to the metal; (vi) evaporating the water portion of the coating; (vii) applying a liquid adhesive coating; and (viii) evaporating the solvent portion.

DETAILED DESCRIPTION - Continuous surface preparation for a metal material comprises:

(a) grit blasting the metal material with a mixture of fine particles of aluminum oxide in air and water, where the grit has a mesh size of 180-320;

(b) rinsing the metal material with water to remove the grit; (c) subjecting the metal material to a caustic solution of sodium hydroxide;

(d) rinsing the metal material with water to remove the caustic solution of sodium hydroxide;
 (e) applying a sol-gel coating to the metal material;
 (f) evaporating the water portion of the sol-gel coating;
 (g) applying a liquid adhesive coating to the sol-gel coating on the metal material; and (h) evaporating the solvent portion of the adhesive coating. An INDEPENDENT CLAIM is also included for a continuous surface preparation apparatus comprising:
 (A) tilt rollers (16, 18, 20) for continuously tilting the metal material from a horizontal orientation to a vertical orientation; (B) a wet hone chamber (22) for continuously grit blasting the metal material with a mixture of fine particles of aluminum oxide in air and water;
 (C) a multiple stage water rinse chamber (24) for continuously removing grit from the metal material; (D) tilt rollers (26, 28, 30) for continuously tilting the metal material back to a horizontal orientation from a vertical orientation; (E) a caustic conditioner chamber for continuously subjecting the metal material to a caustic solution of sodium hydroxide; (F) a rinse chamber for continuously rinsing the metal material with water to remove the caustic solution of sodium hydroxide; (G) a sol-gel coating chamber for continuously applying a sol-gel coating to the metal material; (H) an oven for continuously evaporating the water portion of the sol-gel coating;
 (I) an adhesive coating section for continuously applying a liquid adhesive coating to the sol-gel coating on the metal material; and
 (J) an oven section for continuously evaporating the solvent portion of the adhesive coating.

USE - For continuous surface preparation for a metal material, e.g. titanium, aluminum, stainless steel, nickel, or copper (claimed), preferably for forming titanium/graphite laminate structures.

ADVANTAGE - The method provides for an economical and environmentally sound continuous surface preparation process for titanium and other metals prior to bonding with other materials. DESCRIPTION OF DRAWINGS - The figure shows a grit blast line. Coil (12, 32)

Tilt rollers (16, 18, 20, 26, 28, 30) Wet hone chamber (22)

Rinse chamber (24)

TECH

MECHANICAL ENGINEERING - Preferred Components: The adhesive coating section comprises a dip-coating tank or spray nozzles. The grit has a mesh size of 280. The dry sol-gel layer is 10-500

(preferably 100) nm thick. The dry adhesive coating has a thickness of 0.1-3.0 (preferably 0.75) mils.

INORGANIC CHEMISTRY - Preferred Composition: The caustic solution of sodium hydroxide comprises 10-50 (preferably 25) wt.% sodium hydroxide. The temperature of the caustic solution is 150-220degreesF (preferably 190degreesF).

POLYMERS - Preferred Materials: The liquid adhesive coating is an epoxy-based adhesive coating including an epoxy material and a second curative material. The epoxy material comprises 3-35 wt.% diglycidylether of bisphenol A, 35-60 wt.% diglycidylether of bisphenol A, 10-30 wt.% novolac-epoxy, and 5-18 wt.% carboxy-terminated acrylonitrile-butadiene rubber.

ORGANIC CHEMISTRY - Preferred Materials: The sol-gel is a mixture of a zirconium n-propoxide, 3-glycidoxy-propyltrimethoxysilane, glacial acetic acid, and a surfactant. The surfactant is Antarox BL-240 (RTM) or Tomadol 91-8 (RTM). The adhesive comprises acetone as the solvent. The second curative material comprises 0-100 wt.% 4,4'-diaminodiphenylsulfone, 0-100 wt.% 3,3'-diaminodiphenylsulfone and 0-0.2 wt.% chromium octoate.

DNC C2004-164588 [41]
DNN N2004-347922 [41]
TI Automated solution-gelation mixer for producing sol-gel
for subsequent application to metal substrate, has automated controller
which controls volumetric flows into and out of premix vessel, as well
volumetric flows into final-mix vessel
DC J02; T06; X25
IN BLOHOWIAK K Y; DAVIS B R; JONES S R; WIRE R G
PA (BOEI-C) BOEING CO
CYC 1
PIA US 20040099183 A1 20040527 (200441)* EN 11[5]
US 6796702 B2 20040928 (200464) EN
ADT US 20040099183 A1 US 2002-304151 20021126
PRAI US 2002-304151 20021126
AB US 20040099183 A1 UPAB: 20050530
NOVELTY - A premix vessel in controlled communication with a supply of acid
and supply of zirconium alkoxide receives predetermined volumetric ratio of
acid and zirconium alkoxides. A final-mix vessel in controlled communication
with the premix vessel organosilane supply, and a solvent supply receives
predetermined volumetric ratio of premix, organosilane, and solvent.
DETAILED DESCRIPTION - An automated controller controls volumetric flows into
and out of the premix vessel, as well as volumetric flows into the final-mix
vessel.
INDEPENDENT CLAIMS are also included for the following: (a) a method for
mixing chemicals, to produce sol-gel for subsequent application to metal
substrate; and (b) a system for automated mixing of chemicals to produce sol-
gel.
USE - For producing sol-gel for subsequent application to metal substrate.
ADVANTAGE - Provides properly mixed and properly aged sol-gel mixture for
application to metallic surface. Controls flow rates and dwell time so that
aged sol-gel is available from the mixing process such that the sol-gel might
be generated on an as-needed basis.
DESCRIPTION OF DRAWINGS - The figure shows the flow diagram of the automated
sol-gel mixer.

L111 ANSWER 5 OF 8 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 2004-097718 [10] WPIX Full-text
CR 2004-097717; 2004-097719; 2004-178742
DNC C2004-040547 [10]
DNN N2004-077832 [10]
TI Non-destructive sol-gel coating thickness
determination method of metallic substrate, involves correlating
determined absorbance value of infrared beam in coating of substrate to
sol-gel coating thickness
DC M13; S02; S03
IN SHELLEY P H; TOMT T C; WIRE R G
PA (BOEI-C) BOEING CO; (SHEL-I) SHELLEY P H; (TOMT-I) TOMT T C; (WIRE-I) WIRE
R G
CYC 98
PIA US 20030230719 A1 20031218 (200410)* EN 8[4]
WO 2003106923 A1 20031224 (200410) EN
AU 2003243565 A1 20031231 (200451) EN
US 6797958 B2 20040928 (200464) EN
ADT US 20030230719 A1 US 2002-171870 20020613; AU 2003243565 A1 AU 2003-243565
20030610; WO 2003106923 A1 WO 2003-US18801 20030610
FDT AU 2003243565 A1 Based on WO 2003106923 A
PRAI US 2002-171870 20020613
AB US 20030230719 A1 UPAB: 20060121

NOVELTY - The absorbance value of infrared beam (31) in the sol-gel coating (24) of a metallic substrate (22) is determined. The absorbance value is correlated to a thickness of the sol-gel coating.

USE - For non-destructive determination of measurement of sol-gel coating thickness on metallic substrate, using glow discharge optical emission spectroscopy (GDOES).

ADVANTAGE - The thickness of the sol-gel coating on the metallic substrate is determined efficiently, by correlating the energy absorbance value with the thickness of the sol-gel coating.

DESCRIPTION OF DRAWINGS - The figure shows a side view of coating thickness testing device.

Metallic substrate (22)

Sol-gel coating (24)

Infrared detector (30)

Infrared beam (31)

Spot (33)

L111 ANSWER 6 OF 8 WPIX COPYRIGHT 2007

THE THOMSON CORP on STN

AN 2004-089136 [09] WPIX Full-text

CR 2004-667489

DNC C2004-036418 [09]

DNN N2004-071350 [09]

TI Treatment of metal material involves applying sol-gel solution to the metal material, and applying epoxy-based adhesive coating to the applied sol-gel solution

DC A81; G03; M13; P73

IN ANDERSON R A; ARTHUR S E; BARNES S R; BLOHOWIAK K Y; GRACE W; GRACE W B H; HANSEN D M; JONES S R; TILLMAN M S; WIRE R G

PA (ANDE-I) ANDERSON R A; (ARTH-I) ARTHUR S E; (BLOH-I) BLOHOWIAK K Y; (BOEI-C) BOEING CO; (GRAC-I) GRACE W B H; (HANS-I) HANSEN D M; (JONE-I) JONES S R; (TILL-I) TILLMAN M S; (WIRE-I) WIRE R G

CYC 34

PIA US 20030211330 A1 20031113 (200409)* EN 7[2]

CA 2426663 A1 20031109 (200409) EN

EP 1367146 A2 20031203 (200409) EN

JP 2003342753 A 20031203 (200409) JA 7

ADT US 20030211330 A1 US 2002-143391 20020509; CA 2426663 A1 CA 2003-2426663 20030428; EP 1367146 A2 EP 2003-76297 20030501; JP 2003342753 A JP 2003-130516 20030508

PRAI US 2002-143391 20020509

AB US 20030211330 A1 UPAB: 20060121

NOVELTY - A metal material (50) is treated by preparing a metal (54) material to receive a sol-gel solution coating, preparing a sol-gel solution, applying the sol-gel solution to the metal material, and applying an epoxy-based adhesive coating (52) to the applied sol-gel solution.

USE - For treating a metal material (claimed).

ADVANTAGE - The invention provides an economical and environmentally sound method of preparing metallic materials for bonding with other materials. It increases the metal's ability to adhere to other objects and increase bond strength and durability. DESCRIPTION OF DRAWINGS - The figure shows an exploded view of a metal laminate.

Metal material (50)

Epoxy-based adhesive coating (52) Metal (54)

TECH

METALLURGY - Preferred Method: The metal material is prepared by cleaning the material with an alkaline cleaner and an aqueous degreaser, deoxidizing with chemical deoxidizer and/or mechanical deoxidizer, or conditioning the material by immersing in a heated alkaline solution having a caustic concentration of 5-50%. The alkaline solution is heated

to 140-210degreesF. The mechanical deoxidizer is wet grit blast and/or dry grit blast process. Preferred Component: The form of the titanium is a foil, sheet, honeycomb structure, and/or structural hardware. The metal material is titanium and/or titanium alloy.

ORGANIC CHEMISTRY - Preferred Component: The reagent of the sol-gel solution is a mixture of zirconium alkoxide, 3-glycidoxypyrpyltrimethoxysilane, and a glacial acetic acid. The sol-gel comprises a surfactant. The chemical deoxidizer is hydrofluoric acid and/or nitric acid.

L111 ANSWER 7 OF 8 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2003-185073 [19] WPIX Full-text

DNC C2003-048992 [19]

DNN N2003-145703 [19]

TI Electrochemical luminescence detector for solid nano gold sol-gel and its preparing process

DC E13; S03

IN CAO W; JIA J; QI L

PA (CHAN-N) CHANGCHUN APPLIED CHEM INST CHINESE ACAD .

CYC 1

PIA CN 1379239 A 20021113 (200319)* ZH [0]

<--

ADT CN 1379239 A CN 2002-116460 20020405

PRAI CN 2002-116460 20020405

AB CN 1379239 A UPAB: 20050528

NOVELTY - An electrochemical luminous detector of nanometer solid gold sol-gel uses metal complex as the electrochemical luminous molecule.

DETAILED DESCRIPTION - Its structural formula is $M(P)_x$, where M is Ru, P is ligand chosen from pyridine, and $x=3$.

ADVANTAGE - Its advantages are high stability of electrode, high detection sensitivity and good linearity relationship.

L111 ANSWER 8 OF 8 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2000-126833 [11] WPIX Full-text

DNC C2000-038734 [11]

DNN N2000-095563 [11]

TI Method of optically determining concentration of analyte in a sample

DC A89; E19; E37; J04; S03

IN CHANG Q; SZMACINSKI H

PA (FLUO-N) FLUORRX INC

CYC 81

PIA WO 2000000819 A1 20000106 (200011)* EN 25[7]

<--

AU 9949628 A 20000117 (200026) EN

<--

ADT WO 2000000819 A1 WO 1999-US14709 19990629; AU 9949628 A AU 1999-49628 19990629

FDT AU 9949628 A Based on WO 2000000819 A

PRAI US 1998-91067P 19980629

AB WO 2000000819 A1 UPAB: 20050705

NOVELTY - A method for optically determining concentration of analyte comprises:

(a) contacting an energy transfer donor-acceptor mixture with a sample to be analyzed;

(b) contacting the sensor with a liquid sample; (c) exciting the sensor with intensity modulated radiation; (d) detecting the resulting emission; and (e) calculating the apparent lifetime of the emission to determine the analyte concentration.

DETAILED DESCRIPTION - The method for optically determining concentration of analyte comprises: (a) contacting an energy transfer donor-acceptor mixture with a sample to be analyzed;

(b) contacting the sensor with a liquid sample; (c) exciting the sensor with intensity modulated radiation; (d) detecting the resulting emission; and (e) calculating the apparent lifetime of the emission to determine the analyte concentration.

The changes of pH induced by an analyte within a sensor medium affect the energy transfer between donors and acceptors.

USE - The method is used for optically determining concentration of analyte in a sample.

ADVANTAGE - The sensor can be adapted to sense a wide variety of analytes. The probes have a long luminescence lifetime.

TECH

INSTRUMENTATION AND TESTING - Preferred Method: The donor and acceptor which are bound to a polymeric carrier are mixed together in a known ratio or the donor is mixed with more than one acceptor in known ratios. The apparent lifetime is calculated using phase-modulation or time-resolved fluorometry. The calculated phase angle and modulation are used for determining the analyte. The changes in pH value are induced by the analyte in the liquid samples.

INORGANIC CHEMISTRY - Preferred Component: The donor is selected from metal-ligand complexes, e.g. ruthenium (II), osmium (II) or rhenium (I). The analyte in the liquid sample comprises hydrogen ion, carbon dioxide, sodium, potassium, calcium, magnesium, chloride or ammonia.

ORGANIC CHEMISTRY - Preferred Acceptor: The acceptor is selected from pH indicators, e.g. phthaleins, Bromothymol Blue, Bromophenol Blue, Chlorophenol Red, 3,4,5,6-tetrabromophenolsulfophthalein, m-Cresol Purple, Cresol Red, Phenol Red or Phenolphthalein.

POLYMERS - Preferred Carrier: The carrier ethyl cellulose (EC), poly(2-hydroxypropyl)methacrylate (PHPMA), polymethyl methacrylate (PMMA), polyvinyl cellulose (PVC), polyvinyl butyral (PVB) or sol gel.

ABEX SPECIFIC COMPOUNDS - The donor is Tris(disodium 4,7-diphenyl-1,10-phenanthroline)disulfonate)ruthenium (II) chloride ($\text{Ru}((\text{dpp})\text{Na}_2\text{SO}_3)_3\text{Cl}_2$).

=> => d his

(FILE 'HOME' ENTERED AT 13:12:32 ON 09 JUL 2007)
SET COST OFF

FILE 'HCAPLUS' ENTERED AT 13:12:49 ON 09 JUL 2007

L1	1 S US20050158862/PN OR US2004-762073#/AP, PRN
	E TOMT/AU
L2	4 S E4
	E DAVIS/AU
L3	2 S E3
	E DAVIS B/AU
L4	186 S E3, E26
	E DAVIS BRUCE/AU
L5	29 S E3, E14
	E JONES/AU
L6	3 S E3
	E JONES S/AU
L7	239 S E3
	E JONES S R/AU
L8	64 S E3, E4
	E JONES ST/AU
L9	112 S E51, E84-E86, E94
L10	66 S E100, E124
	E WIRE/AU
L11	8 S E20-E23

E BOEING/PA,CS
L12 3179 S E3,E4
E BEOING/AU
E BEOING/PA,CS
E BOEING/CO
L13 2104 S E3-E97
E E20+ALL
L14 6882 S E2+RT
E SOL/CT
L15 24056 S E21-E25
E E21+ALL
L16 23202 S E3
E E8+ALL
L17 892 S E2
L18 55103 S SOL(A)GEL
L19 55103 S L15-L18
E SOLGEL
L20 369 S E3
E GELSOL
L21 10 S E3-E5
L22 55193 S L19-L21

FILE 'REGISTRY' ENTERED AT 13:20:12 ON 09 JUL 2007

L23 1 S 7647-01-0

FILE 'HCAPLUS' ENTERED AT 13:21:24 ON 09 JUL 2007

L24 102847 S L23
L25 101246 S (HYDROCHLORIC OR CHLORIDRIC OR CHLOROHYDRIC OR MURIATIC OR AN
L26 590018 S HYDROCHLORIC ACID GAS OR HYDROGEN CHLORIDE OR NSC() (77365 OR
L27 639687 S L24-L26

FILE 'REGISTRY' ENTERED AT 13:23:02 ON 09 JUL 2007

L28 1 S 12027-67-7
L29 1 S 12274-10-1
L30 177 S 12274-10-1/CRN
L31 23 S L30 AND H4N
L32 12 S L31 NOT (C21H46N OR C6H12N4 OR CH4N2O OR C19H42N OR C6H24CRN1
L33 43 S L30 AND H2O NOT L31
L34 16 S L33 NOT (C5H11N OR C4H9NO OR ALH6O6 OR CH5N3 OR C4H11N OR C3H
L35 111 S L30 NOT L28,L31-L34
L36 64 S L35 AND 2/NC
L37 14 S L36 AND (RB OR AL OR LI OR MG OR AG OR TL OR CA OR K OR SR OR
L38 47 S L35 NOT L36

FILE 'HCAPLUS' ENTERED AT 13:42:03 ON 09 JUL 2007

L39 2966 S L28
L40 12431 S (AMMONIUM OR NH4 OR HEXAAMMONIUM) () (HEPTAMOLYBDATE OR MOLYBDA
L41 3697 S L29 OR L32 OR L34 OR L37
L42 13259 S L39-L41
L43 1481 S L27 AND L42
L44 5 S L43 AND L22

FILE 'REGISTRY' ENTERED AT 13:45:35 ON 09 JUL 2007

L45 1 S 11098-84-3
L46 1 S 13106-76-8
L47 1 S 14259-85-9
L48 272 S 14259-85-9/CRN
L49 13 S L48 AND H4N
L50 9 S L49 NOT (C4H8CL3O4P OR C4H11NO3 OR C12H15CLNO4PS2 OR C12H31NO

FILE 'HCAPLUS' ENTERED AT 13:48:18 ON 09 JUL 2007

L51 5448 S L45-L47,L50
L52 362 S L51 AND L27
L53 2 S L52 AND L22
L54 5 S L44,L53
E COLORIMETRY/CT
E E3+ALL
L55 6450 S E5+OLD
E E13+ALL
L56 1563 S E6+OLD
E E14+ALL
E E14+ALL
L57 1354 S E3,E4
L58 23 S L22 AND L55-L57
L59 47 S L1-L14 AND L22
L60 73 S L54,L58,L59
L61 27 S L60 AND PY<=2004 NOT P/DT
L62 39 S L60 AND (PD<=20040120 OR PRD<=20040120 OR AD<=20040120) AND P
L63 66 S L61,L62
L64 19 S L63 NOT L59
SEL DN AN 2 12 14 18 19 L64
L65 5 S L64 AND E1-E15
L66 47 S L63 NOT L64
L67 21 S L66 AND (SOL AND GEL)/TI
L68 43 S L66 AND (SOL AND GEL)/AB
L69 24 S L68 NOT L67
L70 26 S L67-L69 AND COAT?
L71 19 S L67-L69 NOT L70
L72 36487 S L22 AND PY<=2004 NOT P/DT
L73 5801 S L22 AND (PD<=20040120 OR PRD<=20040120 OR AD<=20040120) AND P
L74 300 S L73 AND G01N/IPC,IC,ICM,ICS
L75 18 S L72,L73 AND L55-L57
SEL DN AN 1 17 18
L76 3 S L75 AND E16-E24
SEL DN AN L67 6 12
L77 2 S L67 AND E25-E30
SEL AN DN L69 6
L78 1 S L69 AND E31-E33
L79 2 S L66 NOT L67,L68,L69
L80 9 S L65,L76,L77,L78
L81 9 S L80 AND L1-L22,L24-L27,L39-L44,L51-L80

FILE 'REGISTRY' ENTERED AT 14:17:45 ON 09 JUL 2007

L82 1 S 7429-90-5
L83 1 S 12626-23-2

FILE 'HCAPLUS' ENTERED AT 14:18:01 ON 09 JUL 2007

L84 6 S L22 AND (L83 OR ALODIN?)
L85 14 S L81,L84
L86 1120 S L22 AND L82
L87 843 S L86 AND L72,L73
L88 156 S L87 AND L82 (L) DEV/RL
L89 292 S L87 AND COAT?/CW,CT
L90 76 S L87 AND COAT?/SC,SX
L91 437 S L87 AND COAT?
L92 20 S L87 AND G01N/IPC,IC,ICM,ICS AND L88-L91
SEL DN AN 16 20
L93 2 S L92 AND E34-E39
L94 16 S L85,L93
L95 82 S L88 AND L89-L91 NOT L92,L94

L96 16 S L94 AND L1-L22,L24-L27,L39-L44,L51-L81,L84-L95

FILE 'HCAPLUS' ENTERED AT 14:26:22 ON 09 JUL 2007

FILE 'WPIX' ENTERED AT 14:26:48 ON 09 JUL 2007

L97 5966 S SOL(A)GEL
E SOLGEL/BI,ABEX
L98 51 S E3-E6
E GELSOL/BI,ABEX
L99 6005 S L97,L98
L100 352 S L99 AND G01N/IPC,IC,ICM,ICS
L101 10 S L99 AND J04-C03/MC
L102 1 S L99 AND M14-J/MC
L103 40 S L99 AND S03-E04E/MC
L104 22 S L99 AND S03-E09E/MC
L105 51 S L100 AND L101-L104
L106 7 S L101-L104 NOT L105
L107 41 S L105 AND (PD<=20040120 OR PRD<=20040120 OR AD<=20040120)
SEL DN AN L107 1 4 18 29
L108 4 S L107 AND E1-E12
L109 6 S L99 AND (TOMT ? OR DAVIS B? OR JONES S? OR WIRE R?)/AU
L110 5 S L109 NOT ENGELHARD?/PA
L111 8 S L108,L110

FILE 'WPIX' ENTERED AT 14:36:58 ON 09 JUL 2007

E BOEING/PA
L112 48 S L99 AND BOEING?/PA
L113 2 S L112 AND L100
L114 8 S L111,L113
L115 44 S L112 NOT L114

=>

=> fil wpix
 FILE 'WPIX' ENTERED AT 15:18:55 ON 30 JUL 2007
 COPYRIGHT (C) 2007 THE THOMSON CORPORATION

FILE LAST UPDATED: 27 JUL 2007 <20070727/UP>
 MOST RECENT THOMSON SCIENTIFIC UPDATE: 200748 <200748/DW>
 DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> IPC Reform backfile reclassification has been loaded to 31 May 2007. No update date (UP) has been created for the reclassified documents, but they can be identified by 20060101/UPIC and 20061231/UPIC and 20060601/UPIC. <<<

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FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE
<http://scientific.thomson.com/support/patents/coverage/latestupdates/>

>>> FOR DETAILS ON THE NEW AND ENHANCED DERWENT WORLD PATENTS INDEX PLEASE SEE
http://www.stn-international.de/stndatabases/details/dwpi_r.html <<<
 'BI ABEX' IS DEFAULT SEARCH FIELD FOR 'WPIX' FILE

=> d bib ab tech abex kwic tot

L41 ANSWER 1 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 AN 2005-532133 [54] WPIX Full-text
 DNC C2005-161308 [54]
 DNN N2005-435694 [54]
 TI Testing for presence of coating, e.g. sol-gel coating on aircraft parts, by placing test specimen of unknown coating in receptacle containing mixed solution, and timing an event to make determination
 DC J04; M14; S03
 IN DAVIS B R; JONES S R; TOMT T C; WIRE R G
 PA (BOEI-C) BOEING CO
 CYC 37
 PIA US 20050158862 A1 20050721 (200554)* EN 10[1]
 EP 1557668 A1 20050727 (200554) EN
 ADT US 20050158862 A1 US 2004-762073 20040120; EP 1557668 A1 EP 2004-78401 20041215
 PRAI US 2004-762073 20040120
 AB US 20050158862 A1 UPAB: 20051223
 NOVELTY - Testing for the presence of a coating comprises placing a mixed solution in a receptacle, placing a test specimen of unknown coating in the receptacle, and timing an event to make a determination of whether or not the coating is present.
 USE - The invention is used for testing for the presence of a coating, e.g. sol-gel coating on aluminum (claimed) on, e.g. aircraft parts particularly fasteners such as rivets.
 ADVANTAGE - The invention provides a quick, easy, and reliable way to verify the presence of the coating. DESCRIPTION OF DRAWINGS - The figure shows a flowchart diagram of the inventive method.
 TECH
 INSTRUMENTATION AND TESTING - Preferred Method: Timing comprises making a determination of whether or not a sol-gel coating is present. An indicating solution from water and an ingredient comprising

ammonium molybdate, sodium molybdate, or potassium molybdate is prepared. An etching solution from water and an ingredient comprising hydrochloric acid, or hydrobromic acid, is prepared. Preferred Parameter: The event is a change in color of the test specimen to blue, or no change in color of the test specimen after a pre-determined amount of time. The event is the mixed solution becoming opaque.

IPCR G01N0031-22 [I,A]; G01N0031-22 [I,C]

TT TT: TEST PRESENCE COATING SOL GEL AIRCRAFT PART PLACE

SPECIMEN UNKNOWN RECEPTACLE CONTAIN MIX SOLUTION TIME EVENT DETERMINE

MC CPI: J04-C03; M14-J

EPI: S03-E04E; S03-E09E

L41 ANSWER 2 OF 12 WPIX COPYRIGHT 2007

THE THOMSON CORP on STN

AN 2004-526626 [51] WPIX Full-text

DNC C2004-193756 [51]

DNN N2004-417365 [51]

TI Universally applicable color indicator system for sorption and testing of vapors contains a biosorbent impregnated with a chemical as color-changing indicator reagent

DC A89; J01; J04; S03

IN EGGERS-BORKENSTEIN P; GUTTERER J M; MANN G; SAUNUS J

PA (ATCM-N) ATC MANN E K

CYC 1

PIA DE 10261842 A1 20040715 (200451)* DE 5[0]

ADT DE 10261842 A1 DE 2002-10261842 20021220

PRAI DE 2002-10261842 20021220

AB DE 10261842 A1 UPAB: 20050530

NOVELTY - A universally applicable color indicator system contains a biosorbent impregnated with a chemical as indicator reagent giving a distinct color reaction on contact with a substance to be indicated.

USE - As a sorption agent simultaneously giving indication of the presence of a substance to be detected, optionally being used with a conventional filter and especially being used in vapor locks or separators for sorption and/or indication of harmful gases or vapors or for removing carbon dioxide, demisting air or purifying process gases or exhausts (claimed).

ADVANTAGE - The system overcomes the problems associated with the systems of DE3445639 (US4684380), i.e. the cost and disposal difficulties.

TECH

ORGANIC CHEMISTRY - Preferred System : The system also contains a binder and/or crosslinker. The biosorbent is a water-insoluble detecting biological material, especially a cellulose-, lignocellulose- and chitin-containing raw material or residue from the agricultural, forestry, paper, food or fish sectors. In particular, it is based on cellulose, hemicellulose, starch, pectin, xylenes, agarose, dextran, lignin, humic acid, chitin, chitosan or their co-macromolecules and is in the form of (i) a granulate, especially stable spherical porous particles of diameter 0.1-10 (especially 0.2-5) mm or (ii) a filter disc or fleece, the fleece being 0.5-50 (especially 1-20) mm thick.

ABEX EXAMPLE - An indicator system working on the principle of pH change and used in the upper layer of an acid vapor separator and optionally mixed with a known adsorber such as calcium hydroxide or aluminum oxide comprises a 0.2-5 mm cellulose granulate impregnated at granulate : impregnant weight ratio of 5000 : 1 with (i) a Methyl Orange solution (pH color change range 3-4) to detect acid vapor; (ii) Bromophenol Blue solution (pH color change range 3-4) to detect acid vapor; or (iii) Thymolphthalein solution (pH color change range 9-10.5) to detect alkaline vapor.

IPCR G01N0031-22 [I,A]; G01N0031-22 [I,C]

; A12-L04B; J01-E02B; J01-E03C; J04-B01B
EPI: S03-E09E

L41 ANSWER 3 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 2003-625630 [59] WPIX Full-text
DNC C2003-170962 [59]
DNN N2003-497759 [59]
TI Sensitive, fast response thin film ethanol sensor useful in detecting alcohol in gas sample, comprises substrate coated with thin film of bismuth molybdate, and electrode contacts on substrate coated with thin film
DC B04; S03; S05
IN GUPTA H P; JAIN K; KUMAR V; RASTOGI A C; RATOGI A C
PA (COUL-C) COUNCIL SCI & IND RES; (GUPT-I) GUPTA H P; (JAIN-I) JAIN K; (KUMA-I) KUMAR V; (RATO-I) RATOGI A C
CYC 95
PIA US 20030087452 A1 20030508 (200359)* EN 12[4] <--
WO 2003040716 A1 20030515 (200359) EN <--
AU 2002216358 A1 20030519 (200464) EN <--
KR 2004062625 A 20040707 (200472) KO
US 6881582 B2 20050419 (200527) EN
ADT US 20030087452 A1 US 2001-45472 20011108; AU 2002216358 A1
AU 2002-216358 20020101; WO 2003040716 A1 WO 2002-IN1
20020101; KR 2004062625 A KR 2004-707063 20040508
FDT AU 2002216358 A1 Based on WO 2003040716 A
PRAI US 2001-45472 20011108
AB US 20030087452 A1 UPAB: 20060120
NOVELTY - A sensitive, fast response thin film ethanol sensor comprises a substrate coated with a thin film of bismuth molybdate; and electrode contacts deposited on the substrate coated with the thin film.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for: (1) preparation of a sensitive, fast response thin film ethanol sensor, comprising depositing a thin film, from a precursor solution of bismuth molybdenum hexanoate solution, on a substrate at 200-400 degrees C, cooling the deposited film, and depositing electrode contacts on the thin film ethanol sensor; and (2) preparation of precursor solution of bismuth molybdenum hexanoate comprising:
(1) dissolving molybdenum trioxide in oxalic acid solution and concentrating to give a blue colored solution; (2) adding 2-ethyl hexanoic acid to the blue colored solution;
(3) heating the resulting mixed solution to a temperature of 100-150 degrees C for 30-60 minutes to remove water; (4) maintaining the water free solution at 150-250 degrees C for 30-90 minutes to obtain a hot brown colored solution; and (5) adding bismuth trioxide slowly to the brown colored hot solution under reflux.
USE - The thin film sensor is useful in detecting ethanol in gas sample, e.g. alcohol in breath.
ADVANTAGE - The sensor is sensitive, provides fast response and is capable of working at reduced temperature. DESCRIPTION OF DRAWINGS - The figure shows different processing steps for fabricating thin film sensor element.
TECH
INORGANIC CHEMISTRY - Preferred Material: The substrate comprises alumina, titania, zirconia, silica, glass or quartz glass. The water used may be distilled water or deionized water.
Preferred Condition: The ratio of bismuth to molybdenum in the thin film is 2:2, preferably 2:3.
ELECTRONICS - Preferred Component: The electrode contacts are deposited by vacuum evaporation or by thermal evaporation. The evaporated electrode contacts are gold contacts.

Preferred Function: The thin film has the ability to detect concentrations of at least 10 parts per million of ethanol vapor in human breath.

Preferred Condition: The thin film shows a change in resistance due to human breath containing ethanol vapor at a thin film temperature of 250 degrees C. The thin film ethanol sensor has a sensitivity of 2.0-14.5, and has a stability of at least 1 year.

Preferred Method: The thin film of bismuth molybdate is deposited by spray pyrolysis, which is carried out with a chemically inert gas, i.e. pure nitrogen gas.

ORGANIC CHEMISTRY - Preferred Condition: The purity of 2-ethyl hexanoic acid and molybdenum trioxide is at least reagent grade. The bismuth hexanoate solution may be mixed with molybdenum hexanoate solution in a ratio of 2:2 to 2:3. The precursor solution has a stability of at least 3 months.

Preferred Method: The oxalic acid solution is prepared in water. The molybdenum trioxide is added in small quantities to oxalic acid solution maintained at 80-120 degrees C to effect complete dissolution of molybdenum trioxide.

ABEX EXAMPLE - Molybdenum trioxide (2.15 g) was dissolved in oxalic acid solution (3 g in 10 cc water). Molybdenum oxide was added in small quantities to the oxalic acid solution maintained at 100 degreesC. The molybdenum oxide was added until all the oxide was dissolved, then the solution was concentrated by heating until it turned blue. 2-ethyl hexanoic acid (30 ml) was added at 120 degreesC and heating was continued to 200 degreesC under reflux to give a brown color. Bismuth trioxide (2.3 g) was added slowly to the solution under reflux to yield bismuth molybdenum hexanoate precursor solution (Bi:Mo 2:3). - A thin film was prepared by spraying the precursor solution using nitrogen gas carrier onto a quartz substrate at 300 degreesC. Gold contact electrodes were deposited by vacuum thermal evaporation. Electrical conducting wires were attached to the electrodes by pressure contacts. The sensitivity of the film was 2.1, 4 and 6 for 25, 50 and 100 ppm ethanol vapor respectively.

IPCR G01N0001-22 [I,A]; G01N0001-22 [I,C];
G01N0027-12 [I,A]; G01N0027-12 [I,C];
G01N0033-483 [I,C]; G01N0033-497 [I,A]

TT TT: SENSITIVE FAST RESPOND THIN FILM ETHANOL SENSE USEFUL DETECT ALCOHOL
GAS SAMPLE COMPRISE SUBSTRATE COATING BISMUTH MOLYBDATE
ELECTRODE CONTACT

L41 ANSWER 4 OF 12 WPIX COPYRIGHT 2007

THE THOMSON CORP on STN

AN 2002-689468 [74] WPIX Full-text

CR 1999-589254; 2004-666108

DNC C2002-194845 [74]

DNN N2002-543758 [74]

TI. Detecting the presence of an analyte involves placing the analyte in solution, placing the solution in a tube, placing an end portion of the tube in contact with a sorbent and placing a chromogenic detector reagent on the sorbent

DC A89; E19; J04; S03

IN NOVAK T J

PA (USSA-C) US SEC OF ARMY

CYC 1

PIA US 6420181 B1 20020716 (200274)* EN 19[6]

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ADT US 6420181 B1 CIP of US 1996-763181 19961211; US 6420181 B1
US 1999-296602 19990423

FDT US 6420181 B1 CIP of US 5935862 A

PRAI US 1999-296602 19990423

US 1996-763181 19961211

AB US 6420181 B1 UPAB: 20060120

NOVELTY - An analyte is placed in a solution which is then placed in a tube (25) having an end portion with microcapillary opening, so that when the tube is placed in contact with a chromatographic sheet having sorbent surface, the solution is drawn onto the sorbent surface. A chromogenic detector reagent is placed on the sorbent contact place, and a chromogenic indicator is formed when the analyte is present in the sorbent.

DETAILED DESCRIPTION - An analyte is dissolved in a non-aqueous solvent chosen from 55 claimed compounds, such as dimethylsulfoxide and N-methylpyrrolidone. The analyte-containing solution is then placed in a tube (25) having an end portion with a microcapillary sized opening, so that when the tube is placed in contact with a chromatographic sheet having a surface layer formed of sorbent material chosen from 16 claimed compounds, such as silica gel and polysilicic acid, the solution containing the analyte is withdrawn from the end portion and onto the surface of the sorbent by capillary action, the solvent being absorbed into the sorbent and the analyte being separated from the solvent and adsorbed by the sorbent. A chromogenic detector reagent for the analyte is placed on the sorbent at the contact place to detect the presence of the analyte separated from the solvent and concentrated in the sorbent at the place of contact. A chromogenic indicator is formed when the analyte is present in the sorbent.

An INDEPENDENT CLAIM is also included for a method for screening a solution for an analyte and for detecting the presence of the analyte when the solution is deposited in the surface layer of a sorbent.

USE - Micro spot method for detecting the presence of a variety of chemicals and environmental contaminants. The test is also applicable for testing urine for drugs.

ADVANTAGE - The method detects the analyte by allowing it to remain at the application spot, with high detection sensitivity and accuracy. The sample may be solid, soil, lake water or fumes obtained from a chemical plant. The detector reagent solutions need not be prepared just prior to the test. The reagent can be pre-deposited at different locations on the chromatographic medium prior to on-site testing. The actual on-site testing steps are reduced to the microcapillary deposition of solutions containing the analytes and visual observations of the results. DESCRIPTION OF DRAWINGS - The figure shows the end portion of a capillary tube in contact with a sorbent layer. Thin layer chromatography plate (13) Tube (25)

TECH

INSTRUMENTATION AND TESTING - Preferred Method: The screening method further involves dissolving the detector reagent in a solvent to form a detector reagent solution prior to placing the detector reagent for the analyte on the sorbent at the contact place. The analyte-containing solution is placed in a microcapillary sized tube having a volume of 0.1-30 microL and an opening having a diameter of 0.05-1.6 mm.

Preferred Detector Reagent: The detector reagent is chosen from 32 claimed compounds, such as bromocresol green and 7,7,8,8-tetracyanoquinodimethane (TCNQ).

Preferred Properties: The sorbent material comprises a thin layer chromatographic sheet having a surface layer of silica gel sorbent material. The solvent for the detector reagent has less polarity than the sorbent material. The sorbent material is formed of an ion-exchange material chosen from anion exchange resin, cation exchange resin and diethyl aminoethyl cellulose. The solvent for analyte comprises water.

ABEX EXAMPLE - A thin layer chromatographic plate (1 x 3 inch) was scored into twelve 0.5 x 0.5 inch sections. A 1 microL microcap was locked in the tip of a locking forceps. The tip of the microcap was placed in a sample of pure acetone and the solvent was drawn by capillary action to fill the microcap. The microcap tip was placed in contact with the silica gel surface of a solid support near the center of one of the sections. This was the control (analyte level = 0) spot. The solvent was allowed to

evaporate. Using a new microcap for each sample, a different sample solution was spotted in each section and the solvent was allowed to evaporate. 1 drop of bromocresol green was added to each spot. A positive test was indicated by the appearance of a small yellow spot in a large green (wet) or blue (dry) spot. The analytes detected with this test were methyl phosphonic acid (MPA), methylphosphonofluoridic acid (MPFA), ethyl MPA, isopropyl MPA, pinacolyl MPA, cyclohexyl MPA and o-ethyl methylphosphonothioic acid.

IPCR G01N0030-00 [N,C]; G01N0030-90 [N,A];
G01N0031-22 [I,A]; G01N0031-22 [I,C]

L41 ANSWER 5 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 2001-653506 [75] WPIX Full-text
DNC C2001-192744 [75]
TI Aluminum alloy selective reagent set
DC J04; S03
IN HONG I H; JOO S J
PA (HONG-I) HONG I H; (JOOS-I) JOO S J
CYC 1
PIA KR 2001025220 A 20010406 (200175)* KO 1[10] <--
KR 428669 B 20040430 (200457) KO
ADT KR 2001025220 A KR 2000-64786 20001102; KR 428669 B KR
2000-64786 20001102
FDT KR 428669 B Previous Publ KR 2001025220 A
PRAI KR 2000-64786 20001102
AB KR 2001025220 A UPAB: 20050527
NOVELTY - A reagent set includes a mixture solution of 10 to 20% NaOH and 10 to 20% NaClO3 as a first reagent, 6 to 8% HF solution as a second reagent, 1 to 2% NaOH solution as a third reagent, and 0.1 to 0.5% CuCl2 solution as a fourth reagent. An aluminum alloy with a surface changed into black after test of the first reagent is classified as 7000: Al-Zn line alloy. An aluminum alloy with a surface changed into black after test of the second reagent is classified as 2000: Al-Cu line alloy. An aluminum alloy with a surface changed into gray after test of the first reagent, white after test of the second reagent, and dark blue-brown after test of the mixture of third and fourth reagents, is classified into 3000:Al-Mn line alloy. An aluminum alloy with a surface changed into white after test of the first reagent, white after test of the second reagent, and dark blue-brown after test of the mixture of third and fourth reagents, is classified into 1000:non-alloy or 6000:Al-Mg-Si line alloy. An aluminum alloy with a surface changed into gray-white after test of the first reagent, white after test of the second reagent, and dark blue-gray after test of the mixture of third and fourth reagents, is classified into 5000:Al-Mg line alloy.
USE - To select aluminum alloy.
ADVANTAGE - The set minimizes time and cost by allowing aluminum alloy to be easily selected. IPCR G01N0031-22 [I,A]; G01N0031-22 [I,C]
IC ICM G01N0031-22
MC CPI: J04-C
EPI: S03-E09E; S03-E14C

Member(0001)
IIC IICM G01N0031-22

L41 ANSWER 6 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 1999-589254 [50] WPIX Full-text
CR 2002-689468; 2004-666108
DNC C1999-171983 [50]
DNN N1999-434437 [50]
TI Chemical warfare agent or degradation product detector method useful in

screening chemical sample unknowns in Chemical Warfare Convention inspections

DC D16; E19; J04; K02; S03

IN NOVAK T J

PA (USSA-C) US SEC OF ARMY

CYC 1

PIA US 5935862 A 19990810 (199950)* EN 10[0]

<--

ADT US 5935862 A Provisional US 1996-10271P 19960119; US 5935862 A
US 1996-763181 19961211

PRAI US 1996-763181 19961211

US 1996-10271P 19960119

AB US 5935862 A UPAB: 20050705

NOVELTY - Detection of the presence of chemical warfare agents, their precursors or degradation products is effected by contacting liquid samples with a chromatographic adsorbent material via a microcapillary tube and a chromogenic detector reagent, to form a chromogenic indicator when the sample contains a chemical warfare agent, precursor or degradation product.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a kit for chromogenically detecting the presence of chemical warfare agents and their degradation products, consisting of a microcapillary tube for applying the sample, a chromatographic adsorbent material and a chromogenic detector agent.

USE - For screening chemical sample unknowns in Chemical Warfare Convention (CWC) inspections. The methods can be used alone or together with thin layer chromatography to provide presumptive evidence for CWC analytes without identifying any of the components of the samples. The method can be used to screen 30-40 samples in a 4-5 hour period. The methods can detect the presence of chemical warfare agents or their degradation products in the 1-100 ng range.

ADVANTAGE - The method provides increased detection sensitivity and improved accuracy reducing the possibility of false positive tests. Rapid detection of the presence of submicrogram quantities of chemical warfare agents, their precursors or degradation products in a sample is provided. The detection sensitivity is increased over existing methods by applying the sample dissolved in a solvent to a small piece of thin layer chromatography media using a microcapillary tube.

TECH

ORGANIC CHEMISTRY - Preferred Process: The sample is preferably in solution. Sample sizes of 0.1-10 microliter, preferably 0.5-5 microliter and especially 1-3 microliter of the sample are contacted with the adsorbent material and the detector reagent. The microcapillary tube has a cross-sectional diameter of 0.05-0.7 mm, preferably 0.1-0.4 mm, and especially 0.2-0.25 mm.

Preferred Materials: The materials to be tested are selected from ethyl N,N-dimethylphosphoramidocyanate (GA), isopropyl methylphosphonofluoridate (GB), pinacolyl methylphosphonofluoridate (GD), cyclohexyl methylphosphonofluoridate (GF), O-ethyl-S-(2-diisopropylamino)ethyl methylphosphonothiolate (VX), bis(2-chloroethyl)sulfide (HID), bis(2-(2-chloroethylthio)ethyl)ether (T), 2-chlorovinylldichloroarsine (L), methylphosphonic difluoride (DF), ethyl 2-(diisopropylamino)ethyl methylphosphonite (QL), isopropyl methylphosphonic acid (IMPA), pinacolyl methylphosphonic acid (PMPA), cyclohexyl methylphosphonic acid (CMPA), methylphosphonofluoridic acid (MPFA), methylphosphonic dichloride (DC), S-(2-diisopropylamino)ethyl methylphosphonothioic acid (EA 2192), ethyl methylphosphonic acid (EMPA), O-ethyl methylphosphonothioic acid (EMPTA), 1,4-dithiane (DITHIANE), 2-chlorovinylarsenious oxide (L-OXIDE) and methylphosphonic acid (MPA).

Preferred Reagents: The chromatographic adsorbent material is preferably a thin layer chromatography plate including adsorbent that is silica gel or alumina. The backing material for the chromatography plate is glass, plastic or aluminum.

The chromogenic detector reagent is selected from bromocresol green, 7,7,8,8-tetracyanoquinodimethane, cholinesterase/indoxyl acetate, 4-(4'-nitrobenzyl) pyridine/NaOH, sodium pyrophosphate peroxide/aromatic amine, o-dianisidine/sodium perborate, 1,3-diisonitrosoacetone guanidinium salt, bis(diethylamino)benzophenone oxime, bis(diethylamino)benzophenone, bis(dimethylamino)thiobenzophenone, phenylazoformic acid 2-diphenylhydrazide, diphenylcarbazon, diphenylthiocarbazon, diethyldithiocarbamic acid silver salt, and 2,2'-dithiobis(5-nitropyridine).

INORGANIC CHEMISTRY - Preferred Reagents: The chromogenic detector reagent is selected from gold chloride, gold chloride/NaOH solution, 4-(4'-nitrobenzyl) pyridine/NaOH, sodium pyrophosphate peroxide/aromatic amine, o-dianisidine/sodium perborate, potassium bismuth iodide, mercuric salt, molybdenum oxide in sulfuric acid, ammonium molybdate, iodine/starch, and sulfuric acid (4M).

ABEX EXAMPLE - A glass backed silica gel thin layer chromatography plate was scored into 12 0.5x0.5 inch sections. The tip of a microcapillary tube contacted the silica gel to spot samples on the plate. Pure acetone (the solvent for the test) was used as a control. Different sample solutions were similarly spotted onto the other sections of the plate and the solvent was allowed to evaporate. One drop of bromocresol green was dropped onto each spot. The plates were observed for color change. A positive test was indicated by the appearance of a small yellow spot in a large green (wet) or blue (dry) spot. A positive detection signal appeared within 1-2 seconds and the colors remained stable for at least several hours. The detection limits were at the 100 ng level. This test was suitable as a field test for detecting analytes containing a phosphonic acid group, i.e. methylphosphonic acid, methylphosphonofluoridic acid, ethyl methylphosphonic acid, isopropyl methylphosphonic acid, pinacolyl methylphosphonic acid, cyclohexyl methylphosphonic acid and O-ethyl methylphosphonothioic acid.

IPCR G01N0030-00 [N,C]; G01N0030-90 [N,A];
G01N0031-22 [I,A]; G01N0031-22 [I,C]
; E05-G03D; E05-H; E05-M; E06-C; E06-D01; E07-B03; E07-D04C;
E10-A01; E10-A06B; E10-A13A2; E10-A13B2; E10-B01A2; E10-B04A2;
E10-H01A; E11-Q03L; E31-E; E31-F05; E31-K06; E31-P03; E33-A03;
E34-C02; E35; J04-C03; K02-A
EPI: S03-E09C; S03-E14C

L41 ANSWER 7 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
AN 1997-272240 [24] WPIX Full-text
DNC C1997-087632 [24]
DNN N1997-225542 [24]
TI Measuring detectable material produced by chemically reactive group -
uses laminar organic material as reaction system, for analysing e.g.
biological samples, pharmaceuticals and chemicals
DC B04; J04; S03
IN FUKUOKA T; KATAYAMA A; YAMAMOTO K; YONEHARA S; FUKUOKA C O K D K; KATAYAMA
C O K D K; YAMAMOTO C O K D K; YONEHARA C O K D K
PA (ARKR-N) ARKRAY INC; (FUKU-I) FUKUOKA T; (KATA-I) KATAYAMA A; (KYOT-N)
KYOTO DAIICHI KAGAKU CO LTD; (KYOT-N) KYOTO DAIICHI KAGAKU KK; (YAMA-I)
YAMAMOTO K; (YONE-I) YONEHARA S
CYC 20
PIA WO 9716720 A1 19970509 (199724)* JA 108[7] <--
JP 09184835 A 19970715 (199738) JA 20 <--
JP 09184836 A 19970715 (199738) JA 18 <--
JP 09184837 A 19970715 (199738) JA 21 <--
JP 10090245 A 19980410 (199825) JA 14 <--
JP 10090246 A 19980410 (199825) JA 11 <--

EP 860695	A1 19980826 (199838)	EN	<--
CN 1207173	A 19990203 (199924)	ZH	<--
EP 860695	A9 20011017 (200169)	EN	<--
JP 3323402	B2 20020909 (200264)	JA 11	<--
JP 3323404	B2 20020909 (200264)	JA 18	<--
JP 3359821	B2 20021224 (200304)	JA 14	<--
JP 3359822	B2 20021224 (200304)	JA 21	<--
US 20030166295	A1 20030904 (200359)	EN	<--
JP 3446796	B2 20030916 (200362)	JA 21	<--
US 20030175984	A1 20030918 (200362)	EN	<--
US 20030175985	A1 20030918 (200362)	EN	<--
US 20030180183	A1 20030925 (200364)	EN	<--
US 20030203503	A1 20031030 (200372)	EN	<--
US 6777243	B2 20040817 (200454)	EN	
CN 1103919	C 20030326 (200537)	ZH	<--
EP 860695	B1 20060104 (200603)	EN	
DE 69635717	E 20060330 (200628)	DE	
US 7098038	B2 20060829 (200657)	EN	
DE 69635717	T2 20060831 (200660)	DE	
US 7153696	B2 20061226 (200702)	EN	
US 7189576	B2 20070313 (200721)	EN	

ADT WO 9716720 A1 WO 1996-JP3188 19961030; JP 10090245 A JP 1996-239510 19960910; JP 3359821 B2 JP 1996-239510 19960910; JP 10090246 A JP 1996-241677 19960912; JP 3323402 B2 JP 1996-241677 19960912; JP 09184835 A JP 1996-254944 19960926; JP 3359822 B2 JP 1996-254944 19960926; JP 09184836 A JP 1996-270354 19961011; JP 3323404 B2 JP 1996-270354 19961011; JP 09184837 A JP 1996-279661 19961022; JP 3446796 B2 JP 1996-279661 19961022; CN 1207173 A CN 1996-199465 19961030; CN 1103919 C CN 1996-199465 19961030; DE 69635717 E DE 1996-635717 19961030; DE 69635717 T2 DE 1996-635717 19961030; EP 860695 A1 EP 1996-941154 19961030; EP 860695 A9 EP 1996-941154 19961030; EP 860695 B1 EP 1996-941154 19961030; DE 69635717 E EP 1996-941154 19961030; DE 69635717 T2 EP 1996-941154 19961030; US 6777243 B2 Div Ex US 1996-68050 19961030; US 7098038 B2 Div Ex US 1996-68050 19961030; US 7153696 B2 Div Ex US 1996-68050 19961030; EP 860695 A1 WO 1996-JP3188 19961030; EP 860695 A9 WO 1996-JP3188 19961030; US 20030166295 A1 Div Ex WO 1996-JP3188 19961030; US 20030175984 A1 Div Ex WO 1996-JP3188 19961030; US 20030175985 A1 Div Ex WO 1996-JP3188 19961030; US 20030180183 A1 Div Ex WO 1996-JP3188 19961030; US 20030203503 A1 Div Ex WO 1996-JP3188 19961030; US 6777243 B2 Div Ex WO 1996-JP3188 19961030; EP 860695 B1 WO 1996-JP3188 19961030; DE 69635717 E WO 1996-JP3188 19961030; US 7098038 B2 Div Ex WO 1996-JP3188 19961030; DE 69635717 T2 WO 1996-JP3188 19961030; US 7153696 B2 Div Ex WO 1996-JP3188 19961030; US 20030166295 A1 Div Ex US 1998-68050 19980429; US 20030175984 A1 Div Ex US 1998-68050 19980429; US 20030175985 A1 Div Ex US 1998-68050 19980429; US 20030180183 A1 Div Ex US 1998-68050 19980429; US 20030203503 A1 Div Ex US 1998-68050 19980429; US 20030203503 A1 US 2003-384576 20030311; US 6777243 B2 US 2003-384576 20030311; US 20030175984 A1 US 2003-384577 20030311; US 7098038 B2 US 2003-384577 20030311; US 20030166295 A1 US 2003-384605 20030311; US 7153696 B2 US 2003-384605 20030311; US 20030180183 A1 US 2003-384606 20030311; US 20030175985 A1 US 2003-384757 20030311; US 7189576 B2 Div Ex US 1996-68050 19961030; US 7189576 B2 Div Ex WO 1996-JP3188 19961030; US 7189576 B2 US 2003-384757 20030311

FDT DE 69635717 E Based on EP 860695 A; JP 3359822 B2 Previous

Publ JP 9184835 A; JP 3323404 B2 Previous Publ JP 9184836
 A; JP 3446796 B2 Previous Publ JP 9184837 A; JP 3359821 B2
 Previous Publ JP 10090245 A; JP 3323402 B2 Previous Publ JP
 10090246 A; EP 860695 A1 Based on WO 9716720 A; EP 860695
 A9 Based on WO 9716720 A; EP 860695 B1 Based on WO 9716720
 A; DE 69635717 E Based on WO 9716720 A; DE 69635717 T2 Based
 on EP 860695 A; DE 69635717 T2 Based on WO 9716720 A

PRAI JP 1996-279661 19961022
 JP 1995-282146 19951030
 JP 1995-282147 19951030
 JP 1995-282148 19951030
 JP 1996-239510 19960910
 JP 1996-241677 19960912
 JP 1996-254944 19960926
 JP 1996-270354 19961011

AB WO 1997016720 A1 UPAB: 20060113

Measuring a detectable material produced by a chemically reactive group in an analytical sample is characterised in that the reaction system comprises a laminar inorganic material. Also claimed is a test piece for analysing a sample comprising a laminar inorganic material.

USE - The method is used for analysing biological samples (such as urine and blood), food, pharmaceuticals, chemicals and for microbes occurring naturally in the environment or in waste materials.

ADVANTAGE - The system can be stabilised to give accurate measurements, the chemical reaction can be promoted to give quick results and the sensitivity is maintained even when the reaction forms insoluble materials. The test piece gives correct results and is simple to use. IPCI C12Q0001-28 [I,A]; C12Q0001-28 [I,A]; C12Q0001-28 [I,C];

G01N0021-00 [I,A]; G01N0021-75 [I,A];
 G01N0021-75 [I,A]; G01N0021-75 [I,C];
 G01N0021-75 [I,C]; G01N0031-00 [I,A];
 G01N0031-00 [I,A]; G01N0031-00 [I,C];
 G01N0031-22 [I,A]; G01N0031-22 [I,A];
 G01N0031-22 [I,C]; G01N0033-52 [I,A];
 G01N0033-52 [I,A]; G01N0033-52 [I,C];
 G01N0033-53 [I,A]; G01N0033-53 [I,A];
 G01N0033-53 [I,C]; G01N0031-00 [I,A];
 G01N0031-00 [I,C]

IPCR C12Q0001-28 [I,A]; C12Q0001-28 [I,C]; G01N0021-25 [I,C];

G01N0021-27 [I,A]; G01N0021-75 [I,A];
 G01N0021-75 [I,C]; G01N0021-77 [I,A];
 G01N0021-77 [I,C]; G01N0021-77 [I,C];
 G01N0021-78 [I,A]; G01N0021-78 [I,A];
 G01N0021-82 [I,A]; G01N0027-416 [I,A];
 G01N0027-416 [I,C]; G01N0030-00 [I,A];
 G01N0030-00 [I,C]; G01N0031-00 [I,A];
 G01N0031-00 [I,A]; G01N0031-00 [I,C];
 G01N0031-00 [I,C]; G01N0031-02 [I,A];
 G01N0031-02 [I,C]; G01N0031-22 [I,A];
 G01N0031-22 [I,A]; G01N0031-22 [I,A];
 G01N0031-22 [I,C]; G01N0031-22 [I,C];
 G01N0031-22 [I,C]; G01N0033-52 [I,A];
 G01N0033-52 [I,A]; G01N0033-52 [I,C];
 G01N0033-52 [I,C]; G01N0033-543 [I,A];
 G01N0033-543 [I,C]

MC CPI: B03-F; B04-B03B; B04-B04B1; B04-B04D5; B05-B02C; B05-C08; B07-D08;

B10-A16; B10-A20; B11-C07B2; B11-C08E; B12-K04A; J04-B01

EPI: S03-E04E; S03-E09; S03-E09E

L41 ANSWER 8 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 AN 1996-207969 [21] WPIX Full-text
 DNC C1996-066308 [21]
 DNN N1996-174113 [21]
 TI Fast simple analysis of aluminate solns. for sodium
 aluminate, hydroxide and carbonate - by titrating with acid then
 back titrating one sample with alkali and acid titrating other sample in
 presence of barium chloride
 DC E17; E33; J04; S03
 IN AKHMETOVA T I; GALLYAMOVA E I; GATIIYATULLINA L YA
 PA (NIZH-R) NIZHNEKAMSKNEFTEKHIM PRODN ASSOC
 CYC 1
 PIA RU 2043627 C1 19950910 (199621)* RU 4[0] <--
 ADT RU 2043627 C1 SU 1992-5061607 19920907
 PRAI SU 1992-5061607 19920907
 AB RU 2043627 C1 UPAB: 20050512
 Two aliquots of the solution are titrated with a known amount of hydrochloric
 acid, then the excess is back-titrated in one aliquot with alkali to pH 3,
 while in the other, titration is effected with acid in presence of barium
 chloride.
 USE - The method is used for analysis of aluminate solns. obtained during
 production of olefins.
 ADVANTAGE - The process is simple and faster than previous processes.
 IPCR G01N0031-16 [I,A]; G01N0031-16 [I,C]
 TT TT: FAST SIMPLE ANALYSE ALUMINATE SOLUTION SODIUM HYDROXIDE
 CARBONATE TITRATION ACID BACK ONE SAMPLE ALKALI PRESENCE BARIUM
 CHLORIDE
 EXAMPLE
 A 10 ml sample of soln. contg. . . . consuming 8.2 ml acid. The soln.
 was mixed with 20 ml acid and titrated with 0.5 mole/dm³ alkali, using
 bromophenol blue, to blue, followed by dropwise addn.
 of acid to change the colour to yellow. From the 19.45 ml of alkali
 required, the vol. of acid needed to change the soln. from blue
 to yellow (pH 4.6 to 3) was calculated as 18.7 ml. A second portion of 5
 ml of the diluted. . . .
 ; E06-A02B; E11-Q03; E33-A03; E33-D; E34-C03; E34-D03;
 J04-C03
 EPI: S03-E09D

L41 ANSWER 9 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 AN 1991-224721 [31] WPIX Full-text
 DNC C1991-097588 [21]
 DNN N1991-171543 [21]
 TI Doped sol-gel glasses - for interaction between
 dopant and diffusible solutes or components in an adjacent liquid or gas
 phase
 DC A89; B04; D16; J04; S03
 IN AVNIR D; BRAUN S; BROWN S; LEV O; OTTOLENGHI M; ZUSMAN R
 PA (YISS-C) UNIV JERUSALEM HEBREW; (YISS-C) YISSUM RES & DEV CO; (YISS-C)
 YISSUM RES DEV CO HEBREW UNIV JERUSALEM; (YISS-C) YISSUM RES DEV HEBREW
 UNIV JERUSALEM
 CYC 15
 PIA EP 439318 A 19910731 (199131)* EN <--
 EP 439318 A3 19920805 (199336) EN <--
 US 5292801 A 19940308 (199410) EN 12[1] <--
 US 5300564 A 19940405 (199413) EN 8[1] <--
 US 5308495 A 19940503 (199417) EN 12[5] <--
 JP 06122521 A 19940506 (199423) JA 11 <--
 US 5371018 A 19941206 (199503) EN 13[5] <--

US 5650311	A	19970722 (199735)	EN	7[1]	<--
IL 93134	A	19971120 (199809)	EN		<--
EP 439318	B1	19980520 (199824)	EN	19[1]	<--
US 5292801	B1	19980512 (199826)	EN		<--
DE 69129422	E	19980625 (199831)	DE		<--
US 5824526	A	19981020 (199849)	EN		<--
US 5300564	B1	19981229 (199908)	EN		<--
JP 3226555	B2	20011105 (200172)	JA	12	<--

ADT EP 439318 A EP 1991-300458 19910122; IL 93134 A IL 1990-93134 19900123; US 5292801 A Div Ex US 1991-637873 19910108; US 5300564 A US 1991-637873 19910108; US 5308495 A CIP of US 1991-637873 19910108; US 5371018 A CIP of US 1991-637873 19910108; US 5650311 A Div Ex US 1991-637873 19910108; US 5292801 B1 Div Ex US 1991-637873 19910108; US 5824526 A Div Ex US 1991-637873 19910108; US 5300564 B1 US 1991-637873 19910108; DE 69129422 E DE 1991-69129422 19910122 ; EP 439318 A3 EP 1991-300458 19910122; EP 439318 B1 EP 1991-300458 19910122; DE 69129422 E EP 1991-300458 19910122 ; JP 06122521 A JP 1991-24022 19910123; JP 3226555 B2 JP 1991-24022 19910123; US 5308495 A CIP of US 1991-738039 19910731; US 5371018 A CIP of US 1991-738039 19910731; US 5308495 A US 1991-774104 19911011; US 5371018 A Div Ex US 1991-774104 19911011; US 5292801 A US 1992-937258 19920831; US 5292801 B1 US 1992-937258 19920831; US 5650311 A Cont of US 1992-937259 19920831; US 5824526 A Cont of US 1992-937259 19920831; US 5371018 A US 1992-953358 19920930; US 5650311 A US 1994-266441 19940628; US 5824526 A Cont of US 1994-266441 19940628; US 5824526 A US 1996-667746 19960621

FDT DE 69129422 E Based on EP 439318 A; JP 3226555 B2 Previous Publ JP 06122521 A; US 5371018 A CIP of US 5300564 A; US 5650311 A Div ex US 5300564 A; US 5824526 A Div ex US 5300564 A; US 5371018 A Div ex US 5308495 A; US 5824526 A Cont of US 5650311 A

PRAI IL 1990-93134 19900123

AB EP 439318 A UPAB: 20060106

Obtaining an interaction between reagents in a solid support and diffusible solutes or components in an adjacent liquid or gas phase where the reagents are trapped in a sol-gel glass (doped sol gel glass) which provides the solid support for the reagents, in which the sol gel glass is any ceramic or organoceramic material prepared by polymerisation of suitable monomers, such as metal alkoxide mixts., where the polymerisation is carried out through the sol gel-xerogel stages. The interaction may be between enzymes in the liquid phase and a doped substrate such as immunoglobulins, antigens or other chemical or biochemical species trapped in the sol-gel glasses, or vice-versa. The enzymes may be e.g. trypsin, alkaline or acid phosphatase, chitinase, lipase, lactase, aminoacylase, penicillin or cephalosporin acylase, aspartase, peroxidase or glucose oxidase.

USE - The doped sol gel glasses can be used for e.g. analysis of ore contents in earth, rock or water (e.g. uranium), for determin. of ions e.g. H⁺, Fe²⁺, Al³⁺, Co²⁺, Ni²⁺, SO₄²⁻ or Cu²⁺, for analysis of pollutants e.g. nitrates, phosphate, herbicides or insecticides, for detection of components of body fluids (e.g. interleukin-2 receptor) or fractionation of body fluids, for bioconversions, for construction of bioelectronic detection devices including enzyme electrodes and biosensors or for organic synthesis. IPCR . . . C07K0001-14 [I,A]; C07K0016-00 [I,A]; C07K0016-00 [I,C];

C12N0011-00 [I,C]; C12N0011-04 [I,A]; C12N0011-14 [I,A]; C12P0001-00 [I,A]; C12P0001-00 [I,C]; C12Q0001-00 [I,A]; C12Q0001-00 [I,C]; G01N0021-77 [I,A]; G01N0021-77 [I,C]; G01N0027-327 [I,A]; G01N0027-327 [I,C]; G01N0030-00 [I,C]; G01N0030-00 [N,C]; G01N0030-02 [N,A]; G01N0030-88 [I,A];

G01N0030-92 [N,A]; G01N0031-22 [I,A];
 G01N0031-22 [I,C]; G01N0033-543 [I,A];
 G01N0033-543 [I,C]; G01N0033-551 [I,C];
 G01N0033-552 [I,A]; G01N0033-68 [I,A];
 G01N0033-68 [I,C]; G01N0033-84 [I,A];
 G01N0033-84 [I,C]

TT TT: DOPE SOL GEL GLASSES INTERACT DIFFUSION SOLUTE

IC ICM G01N0031-22

ICS C12M0001-40; G01N0027-36

; B04-C01G; B04-C03D; B04-D02; B05-A01B; B05-A02; B05-A03A;
 B05-A03B; B05-B01B; B05-B02A3; B05-B02C; B05-C02; B05-C05; B05-C07;
 B05-C08; B11-B; B11-C08; B12-K04; D05-H09; J04-B01
 EPI: S03-E09E; S03-E14H4

Member. . . a reactive sol-gel glass comprises polymerising at least one monomer of formula $M(R)_n(P)_m$ (I) e.g. metal alkoxides, semi-metal alkoxides, metal esters or semi-metal esters, and opt. an organic monomer, under acidic, neutral or basic conditions and in the presence of a dopant to form a porous xerogel contg. the trapped dopant within. The polymerisation includes a gelling step conducted at not greater than 45 deg.C. The dopant is a gp. e.g. organic cpds., stable organic radicals, organometallic cpds., inorganic cpds. or mols. of biological origin. The dopant is reactive after prepn. of xerogel. In (I), M = metallic or semi-metallic element (pref. Si, Al, Ti or Pb); R = a hydrolysable substit. (pref. alkyl, aryl, alkoxy. . . n = 1 to 6; P = non-polymerisable substit.; and m = 0 to 6 integer.

USE - The doped sol-gel glass in various forms may be useful as analytical test, chromatographic medium sensor, catalyst or biocatalyst, electrode or enzyme electrode, . . .

Member. . . an inorganic sol-gel porous glass by conducting polymerisation in the reagent, which is reactive after prepn. of the glass. Reagent trapped is interacted with a component which is in a liq. or gas phase in pores of the sol-gel glass and which is reactive with the reagent in the pores.

USE - Used as an analytical test, chromatographic medium, sensor, (bio)catalyst, electrode or other detection device.

Member. . . in a sample comprises passing the sample through columnar or planer chromatographic apparatus packed with porous doped sol. gel glass formed from metal alkoxide by a gelling step at room temp. and a drying step at not above 41 deg.C. The doped sol gel glass encapsulates a cpd. which is reactive with the reactive chemical in the pores of the glass. The appts. is e.g. for thin layer chromatography including plates contg. the doped sol gel glass, e.g. Fe may be determined with a sol gel glass encapsulating 1,10-o-phenanthroline, or Co, Fe and Cu with 1-nitroso-2-naphthol. Sepn. and spot visualisation may be performed in one step. Gas samples are analysed by passage through glass capillaries or tubes into porous doped sol gel glass pellets contg. a colorimetric reagent to form a coloured section of capillary or tube the length of which is. . .

Member. . . support and diffusible solutes, or components in an adjacent liq. or gas phase where the reagents are trapped in a sol-gel glass (doped sol gel glass) which provides the solid support for the reagents, in which the sol gel glass

is any ceramic or organoceramic material prepd. by polymerisation of suitable monomers, such as metal alkoxide mixts., where the polymerisation is carried out through the sol gel-xerogel stages. The interaction may be between enzymes in the liq. phase and a doped substrate such as immunoglobulins, antigens or other chemical or biochemical species trapped in the sol-gel glasses, or vice-versa. The enzymes may be e.g. trypsin, alkaline or acid phosphatase, chitinase, lipase, lactase, aminoacylase, penicillin or cephalosporin acylase, aspartase, peroxidase or glucose oxidase.

USE - The doped sol gel glasses can be used for e.g. analysis of ore contents in earth, rock or water (e.g. uranium), for determin. of. . .

Member. . . chemical comprises contacting a liquid sample with porous sol-gel glass pellets doped with colorimetric reagent in a glass tube and measuring the length of a stained region. The pellets are formed by gelling metal alkoxide at room temp. in the presence of dopant and drying no higher than 41 deg.C. The tube is pref. a capillary and is immersed in sample. . . be an acidic or alkaline pH indicator, 1,10-o-phenanthroline to detect Fe(II), 1-nitroso-2-naphthol to detect Co ion, or alizarin to detect Al ion.

ADVANTAGE - Provides a convenient and effective method.

Member. . . support and diffusible solutes or components in an adjacent liq. or gas phase where the reagents are trapped in a sol-gel glass (doped sol gel glass) which provides the solid support for the reagents, in which the sol gel glass is any ceramic or organoceramic material prepd. by polymerisation of suitable monomers, such as metal alkoxide mixts., where the polymerisation is carried out through the sol gel-xerogel stages. The interaction may be between enzymes in the liq. phase and a doped substrate such as immunoglobulins, antigens or other chemical or biochemical species trapped in the sol-gel glasses, or vice-versa. The enzymes may be e.g. trypsin, alkaline or acid phosphatase, chitinase, lipase, lactase, aminoacylase, penicillin or cephalosporin acylase, aspartase, peroxidase or glucose oxidase.

USE - The doped sol gel glasses can be used for e.g. analysis of ore contents in earth, rock or water (e.g. uranium), for determin. of. . .

Member. . . support and diffusible solutes or components in an adjacent liq. or gas phase where the reagents are trapped in a sol-gel glass (doped sol gel glass) which provides the solid support for the reagents, in which the sol gel glass is any ceramic or organoceramic material prepd. by polymerisation of suitable monomers, such as metal alkoxide mixts., where the polymerisation is carried out through the sol gel-xerogel stages. The interaction may be between enzymes in the liq. phase and a doped substrate such as immunoglobulins, antigens or other chemical or biochemical species trapped in the sol-gel glasses, or vice-versa. The enzymes may be e.g. trypsin, alkaline or acid phosphatase, chitinase, lipase, lactase, aminoacylase, penicillin or cephalosporin acylase, aspartase, peroxidase or glucose oxidase.

USE - The doped sol gel glasses can be used for e.g. analysis of ore contents in earth, rock or water (e.g. uranium), for determin. of. . .

Member. . . support and diffusible solutes or components in an adjacent liq.

or gas phase where the reagents are trapped in a sol-gel glass (doped sol gel glass) which provides the solid support for the reagents, in which the sol gel glass is any ceramic or organoceramic material prepd. by polymerisation of suitable monomers, such as metal alkoxide mixts., where the polymerisation is carried out through the sol gel-xerogel stages. The interaction may be between enzymes in the liq. phase and a doped substrate such as immunoglobulins, antigens or other chemical or biochemical species trapped in the sol-gel glasses, or vice-versa. The enzymes may be e.g. trypsin, alkaline or acid phosphatase, chitinase, lipase, lactase, aminoacylase, penicillin or cephalosporin acylase, aspartase, peroxidase or glucose oxidase.

USE - The doped sol gel glasses can be used for e.g. analysis of ore contents in earth, rock or water (e.g. uranium), for determ. of. . .

Member. . . support and diffusible solutes or components in an adjacent liq. or gas phase where the reagents are trapped in a sol-gel glass (doped sol gel glass) which provides the solid support for the reagents, in which the sol gel glass is any ceramic or organoceramic material prepd. by polymerisation of suitable monomers, such as metal alkoxide mixts., where the polymerisation is carried out through the sol gel-xerogel stages. The interaction may be between enzymes in the liq. phase and a doped substrate such as immunoglobulins, antigens or other chemical or biochemical species trapped in the sol-gel glasses, or vice-versa. The enzymes may be e.g. trypsin, alkaline or acid phosphatase, chitinase, lipase, lactase, aminoacylase, penicillin or cephalosporin acylase, aspartase, peroxidase or glucose oxidase.

USE - The doped sol gel glasses can be used for e.g. analysis of ore contents in earth, rock or water (e.g. uranium), for determ. of. . .

L41 ANSWER 10 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 AN 1991-063376 [09] WPIX Full-text
 DNC C1991-027075 [21]
 DNN N1991-048898 [21]
 TI Method for detecting segregation of aluminium in titanium alloy
 - comprises immersing titanium alloy in an electrolyte solution and raising voltage between electrodes by passing current to form oxide film
 DC J04; M26; S03
 IN FUNABASHI Y; MATSUMURA T
 PA (KAWI-C) KAWASAKI STEEL CORP
 CYC 1
 PIA JP 03013857 A 19910122 (199109)* JA <--
 ADT JP 03013857 A JP 1989-148315 19890613
 PRAI JP 1989-148315 19890613
 AB JP 03013857 A UPAB: 20050430
 Method comprises immersing Ti alloy in an electrolyte solution, with Ti alloy used as the anode and raising gradually the voltage between electrodes by passing minute current until the voltage attains to 10-35 V. to form oxide film of different colour tones with change depending on Al concentration on the surface of the Ti alloy. Pref. the minute electric current passed is in a range of 0.05-1.0 mA/cm². Pref. the Ti alloy is e.g., Ti-6Al-4V alloy. In the anodic oxidation of Ti alloy in e.g., 10% sodium sulphate aqueous solution the oxide film exhibits different colours depending on the content of Al in Ti alloy. Ti-4Al-4V alloy gives sky-blue colour, Ti-5Al-4V alloy gives blue colour, Ti-6Al-4V alloy gives reddish violet colour, Ti-7Al-4V alloy gives brown colour and Ti-8Al-4V alloy gives golden colour.

USE/ADVANTAGE - The method is useful for detecting simply and rapidly the part of Al segregation in ingot of Ti alloy. A part of Al segregation can be dyed with a different colour from that of normal part by simple constant current electrolysis alone and the Al concentration difference of more than 1% can be distinctly discriminated according to the method. Also as no acid treatment by hydrofluoric acid, nitric acid, etc. is required, rapid and simple detection of Al segregation in Al alloy ingot can be safely carried out. @ (5pp Dwg.No.1,2/5)@ IPCR G01N0027-42 [I,A]; G01N0027-42 [I,C];

G01N0033-20 [I,A]; G01N0033-20 [I,C]

TT TT: METHOD DETECT SEGREGATE ALUMINIUM TITANIUM ALLOY COMPRISE
IMMERSE ELECTROLYTIC SOLUTION RAISE VOLTAGE ELECTRODE PASS CURRENT
FORM OXIDE FILM

L41 ANSWER 11 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1990-153746 [20] WPIX Full-text

DNC C1990-067168 [21]

DNN N1990-119345 [21]

TI Non-destructive surface quality testing of aluminium alloys -
using aqueous solution of methylene blue on specimen surface to detect
etching and degreasing

DC M14; S03

IN KRYLOVA V K; YANITSKIS V I; ZELIONKAIT V I

PA (KHAU-N) KAUN AUTOMN EXP WKS; (KUPO-C) KAUN POLY

CYC 1

PIA SU 1518740 A 19891030 (199020)* RU <--

ADT SU 1518740 A SU 1987-4329892 19870911

PRAI SU 1987-4329892 19870911

AB SU 1518740 A UPAB: 20050430

The technique involves liquid-penetrant detection to determine the degree of degreasing of the metal surfaces prior to coating with metals and non-metals. This involves the use of a washing solution, and then spraying the specimen (in a vertical position) with an aqueous solution of a dye, drying and visual inspection.

The aqueous solution of the dye contains 0.3-0.5 weight% of methylene blue. A banded structure may be formed on the specimen surface to indicate the presence of grease and/or etched regions on the surface.

ADVANTAGE - The sensitivity and reliability of the test are improved.

Bul.40/30.10.89 @ (3pp Dwg.Number 0/0) IPCR G01N0021-88 [I,C]; G01N0021-91 [I,A]

TT TT: NON DESTROY SURFACE QUALITY TEST ALUMINIUM ALLOY AQUEOUS
SOLUTION METHYLENE BLUE SPECIMEN DETECT ETCH DEGREASE

MC CPI: M25-H

EPI: S03-E04E; S03-E04F; S03-E14C

L41 ANSWER 12 OF 12 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1977-53020Y [30] WPIX Full-text

TI Rapid colorimetric determination of anion - by depositing a known
quantity of solution from a capillary onto an absorbent material and
comparing with standard stains

DC J04; S03

PA (WAKP-C) WAKO PURE CHEM IND LTD

CYC 1

PIA JP 52070889 A 19770613 (197730)* JA <--

JP 62013627 B 19870327 (198716) JA <--

ADT JP 52070889 A JP 1975-131119 19751031

AB JP 52070889 A UPAB: 20050417

Rapid colorimetric determination of an ion comprises sampling a given amount of solution containing a coloured cpd. in a uniform, dilute and dispersed state, of ions to be detected in a capillary, contacting the capillary with a solution-

absorbing material, laminating the coloured cpd. on the solution absorbing material in the dia. of the capillary, and determining the ion from the quantitative colour formation. Various ions even in low concentration can be determined by the method. Solution absorbing material is e.g. paper, cloth, synthetic paper, synthetic fibre, paper towel, thick filter paper, etc. Capillary is transparent glass or plastic capillary of 0.8-1.2 mm, in inner diameter and 100-120 mm, in length. Coloured cpd. from ion is e.g. Prussian blue in determination of cyanide ion, ferricyanide ion or ferrocyanide ion, diethyldithiocarbamic acid-Cu complex (brown colour) in determination of Cu ion, dimethylglyoxime-Ni complex (red colour) in determination of Ni ion, etc. The method is applicable to Cn, Cu, Ni, Pd, K, Cd, Ag, Co, Mg, Al, Be, etc. and complex ions containing these ions. The determination of ion is made by comparing the coloured spot formed on absorbing material with standard colour of the ion by eye. IPCR G01N0031-00 [I,A]; G01N0031-00 [I,C]; G01N0031-22 [I,A]; G01N0031-22 [I,C]

=> => d his

(FILE 'HOME' ENTERED AT 14:33:36 ON 30 JUL 2007)
SET COST OFF

FILE 'WPIX' ENTERED AT 14:33:50 ON 30 JUL 2007

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L1      431717 S G01N/IPC,IC,ICM,ICS
L2      10942 S L1 AND (AL OR ?ALUMIN?)
L3      2513 S L1 AND A313/M0,M1,M2,M3,M4,M5,M6
L4      695 S L1 AND (M26-B09 OR L04-C10C OR G01-A12A OR G01-A10 OR E05-B02)
L5      11720 S L2-L4
L6      345 S L5 AND S03-E09E/MC
L7      345 S L5 AND S03-E09E/MC
L8      2421 S L5 AND Q505/M0,M1,M2,M3,M4,M5,M6
L9      206 S L5 AND N105/M0,M1,M2,M3,M4,M5,M6
L10     2748 S L6-L9
L11     2460 S L10 AND (PD<=20040120 OR AD<=20040120 OR AD<=20040120)
L12     326 S L11 AND G01N031-22/IPC,IC,ICM,ICS
L13     69 S L11 AND J04-C03/MC
L14     361 S L12,L13
L15     430 S L11 AND G01N031/IPC,IC,ICM,ICS
L16     452 S L14,L15
L17     340 S L5 AND S03-E04E/MC
L18     288 S L17 AND (PD<=20040120 OR AD<=20040120 OR AD<=20040120)
L19     89 S L18 AND G01N031-22/IPC,IC,ICM,ICS
L20     108 S L18 AND G01N031/IPC,IC,ICM,ICS
L21     21 S L18 AND J04-C03/MC
L22     471 S L16,L19-L21
L23     4 S L22 AND SOL(A)GEL?
L24     3 S L23 NOT 2003-513658/AN
L25     1 S L23 AND BLUE
L26     3 S L24,L25
L27     315 S L5 AND BLUE
L28     293 S L27 AND (PD<=20040120 OR AD<=20040120 OR AD<=20040120)
L29     12 S L28 AND ?MOLYBD?
        SEL AN 1 6
L30     2 S L29 AND E1-E2
L31     4 S L26,L30
        E AMMONIUM MOLYBDATE/CN
L32     2 S E3,E4
L33     596 S (R06252 OR R14435 OR RA00E9)/DCN
L34     2 S L33 AND L28
L35     1 S R10662/SDCN
L36     6 S L34,L31

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L37 6 S L36 AND L1-L36
L38 280 S L28 NOT L29-L37
 SEL AN 18 104 200 224 231 269 L38
L39 6 S L38 AND E1-E6
L40 12 S L37,L39
L41 12 S L40 AND L1-L40

FILE 'WPIX' ENTERED AT 15:18:55 ON 30 JUL 2007

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